The Builder.

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ILLUSTRATIONS.

Competition Designs for Christ's Hospital Schools.—By Messrs. Carpenter & Ingelow :—
View outside Gate House ..... *Single-Page Photo-Litho.*
View of Hall and Class-rooms, and part of Museum and Chapel ..... *Single-Page Photo-Litho.*
Elevations and Sections of various Buildings ..... *Double-Page Ink-Photo.*
General Plan ..... *Extra Large Photo-Litho.*

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Progress of the Excavations at Delphi.

DISCOVERIES at Delphi during the past spring and early summer have followed each other thick and fast. The present seems a favourable moment for presenting a brief summary of the work already done, with a view to clearing the field for the better understanding of the fresh campaign shortly to be begun in the autumn. There is no question that the results so far have exceeded expectations. The precipitous site of Delphi, and the certainty that it had been repeatedly pillaged, led to gloomy forebodings that, save for inscriptions, little of value would be found. But fate has been unusually kind, and that in the matter of sculptures, where least was expected. It is with these sculptures that we propose to begin our *résumé*.

First and foremost, unique indeed among archaic sculpture, stands the frieze from the Treasury House of the Siphnians. The island of Siphnos has sprung into sudden archæological fame. Pausanias (x., 11, 2) mentions the Treasury, but not the frieze. He tells how the Siphnians had productive gold mines, and how in accordance with an oracle they built the Treasury and offered a tithe of their revenue from the mines to the god; how later they omitted the tribute, and the sea broke in and destroyed the mines. The frieze discovered is of Parian marble, and is in an excellent state of preservation. It is executed with extraordinary minuteness and delicacy; certainly only a wealthy community with gold to spare like the Siphnians could have afforded a work involving such an amazing amount of labour. Dr. Baumeister, in noting his impressions, said that it reminded him of an archaic vase of the finest and most delicate style translated into stone. From his account (*Berliner Philologische Wochenschrift*, 1894, No. 27) we borrow the following details:—On one side is depicted a fight of gods and giants; the giants are represented as usual in black-figure vase paintings as armed men, the gods are in many cases supported by their attributive animals, which at this early date is somewhat surprising. The centre place is occupied by Kybele, in a chariot drawn by lions; one of the lions has fallen upon a giant and is tearing him to pieces. The shields of the various combatants are seen mostly from the inside, and are sunk in the ground of the frieze; they bear many traces of red colouring; whereas the defensive weapons as well as bridles, trappings, and the like are worked in relief, and so delicately that in many cases they are broken away; some were put in in bronze.

On a second side is represented an assembly of the gods. Ares, armed, is seated at one end, Leto and Artemis are caressing a youth who turns toward them, and who is presumably Apollo. The fragment with Zeus has not yet been found. Athene wears her ægis, which it is interesting from the mythological point of view to know is represented as a skin. She and Dionysos both sit upon splendidly carved seats. The arm of the chair of Dionysos rests on a satyr and a mænad, carved with a minuteness that can only be compared to ivory technique, and which therefore are only partially preserved. From the account of this frieze we may conjecture that the subject is not a mere conclave of the gods, but an assembly for the special purpose of receiving Apollo among the Olympians—the scene described in the Homeric legend, and which, according to Dr. Dümmler, appears on the Brygos vase in the Louvre. Such a scene, would of course, be most appropriate at Delphi.

A third series of slabs is in subject less interesting. It represents a Homeric combat over a fallen warrior; the scene is bounded by chariots with charioteers. The last series is less clear in meaning. It represents a scene within a house; female slaves are depicted standing in evident alarm near some *πίθοι*. This is at one end of the composition. It is confidently expected that in the course of the excavations the whole series of slabs will be completed, and we shall then have a monument of very peculiar technique and of great importance *quâ* subject.

The remaining sculptures, to which, from time to time, we have called attention, may be more briefly noted. The metopes of the Treasury of the Athenians are only second in interest to the Siphnian frieze. The building, it will be remembered, is dated exactly by an inscription stating that it was set up as a votive offering after the battle of Marathon; so that here we have a definite fixed point in the chronology of Greek sculpture—a standard by which to judge and date other monuments. The subjects represented in the metopes are deeds of Herakles and of Theseus and Amazon contests. It is specially fortunate that a monument so securely dated should be decorated with these subjects, which are such frequently recurring types, as it makes comparison the more easy. We again quote Dr. Baumeister as to the style of these metopes. The fetters of archaism are by no means thrown off; in some points the figures resemble the Ægina marbles; there is still great difficulty in expressing any but the simplest attitudes. In the Herakles metope, *e.g.*, in which the hero is represented as overcoming the Kerynean stag, he is supposed to be kneeling on the creature, but at the first glance he seems to be lying backwards, somewhat in the attitude of the familiar drunken Faun of Munich: the ancient artist could not make up his mind to completely forego the full-face attitude of the body.

From the great Temple of Apollo so far only one fragment has been discovered, and that is the colossal head of a horse. This probably comes from the Eastern pediment in which was represented Apollo between Leto and Artemis, in the angle the setting sun. In all probability the horse belongs to the sun's chariot. From the western pediment, in which Dionysos and his Thyiades were represented, no fragment has so far been found, or at least identified, but as the excavators are only just now actually coming to the great temple this is not surprising.

It is uncertain to what building a small pediment belongs, made out of one slab. On it is represented that popular Delphic subject, the contest between Herakles and Apollo for the tripod. The style of the design is very stiff and archaic. The building, probably a treasure-house, must have been a very small one. Gathered together in a temporary museum are a number of other more or less fragmentary sculptures, and noticeable among them is the head of the Sphinx dedicated by the Naxians. The colossal body still lies where it was

found on the terrace between the great temple and the polygonal wall. It is a noticeable point in the head that the "archaic smile" still lingers about the corners of the lower lip, whereas the upper lip is quite expressionless. Another colossal statue (of Apollo) with an inscription must be noted in passing. It is by an Argive sculptor, and is of archaic style. From a gigantomachia there remains a very remarkable fragment—the head of a wounded combatant worked in high relief. An arrow has pierced the left eye, and the point protrudes near the right ear. The expression of intense suffering is noticeable, the eye (the face is in profile) is staring wide open, the forehead and upper part of the nose wrinkled in folds, the mouth open and the teeth clenched; the hair stands on end, looking almost like a halo of flame.

We pass next to topographical and architectural discoveries. The modern village of Kastri has, as is well known, been completely removed. It is perhaps not so well known that it has only been moved away about a hundred paces in the direction of the village of Chryso and there solidly rebuilt. The peasants have gained substantially; but there is this archæological disadvantage, that the western necropolis of ancient Delphi, with its innumerable rock-tombs, has been sacrificed in considerable part to the new modern village. The modern Kastriote has no archæological compunction, and is not restrained from breaking up these rock-tombs wherever they form a convenient quarry for building stone.

The plan of the excavations has been to begin on the lower ground and work upwards. Several rails have been laid down for trucks to transport away the débris. The work is carried on under the immediate supervision of M. Homolle. There is at present no architect in charge, but there is of course an engineer to supervise the practical operation of the works. The *Wochenschrift* complains of this omission, and states that sufficient attention is not paid to the recording of the exact position in which monuments are discovered. Comparison, much to the disadvantage of Delphi, is drawn with the method of work at Olympia. It is only fair, however, to remember that German criticism of French work is not likely to err on the side of partiality. Moreover, the conditions at Delphi and Olympia are widely different. At Olympia we have a flat plain with no important differences in elevation—an ideal field for excavation. The precipitous position of Delphi makes it a most difficult site for systematic excavation, and, in the case of vases and inscribed stones, obviously already not *in situ*, they often must be moved, and the position where they were found is of comparatively little importance. The French are certainly not, as a school, so strong in matters of topography as the Germans, but with the critical eyes of Europe fixed upon them, it is scarcely likely that any serious oversight will be possible. Moreover, from other sources we learn that an exact register *is* kept of the precise place where each object is found and the condition of its finding.

Entering the precinct, as Pausanias did, from the east, it is interesting to note that the excavations have in the main confirmed Pomtow's acute conjectures as to the lie and direction of the Sacred Way. The Arcadian inscription mentioned by him is not visible now, but the brazen bull by Theopropos, the monument which Pausanias mentions as standing at the entrance, has yielded its basis with the inscription. Unfortunately, this is one of the instances where a basis is not *in situ*. The bull, it will be remembered, was a votive offering to Poseidon from the Corcyrans. Tradition said that a bull in Corcyra used to leave the rest of the herd and go down to the sea bellowing. As this happened daily, the herdsman went down to the sea to find out the reason, and noticed a shoal of tunny-fish. The people of Corcyra had great difficulty in catching as many of the fish as they wanted. They sent messengers for instructions to Delphi. The oracle bade them sacrifice the bull to Poseidon, which certainly seemed hard on their benefactor. It was done, however, and the tunny-fish caught. The bronze bull at Delphi represented the tithe of the take. A little further along the sacred way two semi-circular bases stand, one on either side of the road. On these must have stood some of the many votive statues enumerated at this point by Pausanias. The bases discovered are almost countless; they are far more numerous, more architectually varied, and some of them larger in size than those found at Olympia. The few that remain *in situ* are of course invaluable as topographical fixed points. The sacred way itself is paved with large slabs of stone, and these are indented with grooves to facilitate the steep ascent. The ascent is straightforward for a little distance, the bases of votive offerings being ranged on either side; but before the first turn of the road and mostly to the left hand lie the foundations of the various treasure-houses. Portions of the walls of these remain to a considerable height. The sacred way continues the ascent to the south of the polygonal wall with the long-known stoa of the Athenians, but a branch road goes to the north-west round the polygonal wall.

Close to this point lies a group of cleft rock left quite unworked on the inner sides. This rock group has an important cultus significance; it is the πετρα ἀνίσχουσα ὑπὲρ τῆς γῆς which Pausanias (x., 12-1) mentions as the place where the Hierophile in old times chanted her oracles, she who was called the Sibyl; she was the first woman who uttered oracles. The sacred way next turns round the east corner of the polygonal wall to the north, and passes by a large complex of walls, the purport of which is somewhat problematic. It lies to the west of the large temple. Dr. Baumeister conjectures that it may be the great altar—its position fronting the east end of the temple would be appropriate. The sacred way passing this supposed altar on the east side mounts steeply up, and takes a turn necessitated by the great temple. At this point the excavations are now in full progress, and it is, therefore, too early to report on results. Great drums of columns lie about in all directions, and some uncompleted capitals. The ground plan cannot yet be determined with certainty. The railway track line leads, according to the account in the *Wochenschrift*, right across the temple foundation, which seems undesirable.

We may remind our readers that in vol. xiv. of the *Hellenic Journal* Dr. Middleton has a paper on the "Temple of Apollo at Delphi," bringing together all the information possible before the excavations. It will be interesting to note how far his conjectural plan of the temple is borne out by facts. M. Homolle, the Director of the French School, is most hospitable and kind in facilitating the inspection of all antiquities discovered, but, naturally, no photographs, measurements, sketches, &c., are allowed. It is proposed to publish the results as soon as possible after discovery in a special work to appear in instalments. The mass of materials is too great for publication in the ordinary Bulletin of the School. The first issue will be looked for with interest, and we may hope it will contain the remarkable Siphnos frieze.

NOTES.

WE print a further letter from Mr. T. G. Jackson on the subject of Messrs. Comyn Ching & Co.'s circular, and that of commissions to architects generally. Mr. Jackson's letter is obviously prompted by the feeling that every honourable man would have, that having unwittingly done Messrs. Ching an injustice (for which, however, their own exceedingly injudicious form of circular was almost entirely to blame), he is anxious to withdraw the imputation as fully as possible. Further, he seems to imply that the architects are quite as much to blame in the matter as the tradespeople. As to the extent to which this is true we have no means of judging. It is natural to conclude that there must be some architects (or people calling themselves so) who take commissions from tradesmen employed on their buildings, or the offer would not be so frequently made. A day or two after Mr. Jackson's first letter appeared a well-known firm wrote to us saying that they had that day received a letter from the Borough Surveyor of a provincial town stating that he had specified a certain patent of theirs for use in his borough, and expected a commission. But these gentlemen did not offer to print their statement, or to give the name of the offending Surveyor, even privately. But such a statement made to us by a trading firm is quite an exceptional thing. One or two letters we have received from time to time, making charges of this kind against the architectural profession; but they are always anonymous. In the course of each year we usually receive a certain number of letters from architects expressing themselves very indignantly in regard to offers of commissions they have received in tradesmen's circulars. But we can never remember to have received, except in the one case just alluded to, signed letters by virtuous tradesmen expressing their indignation against architects who accept or expect commissions. Therefore we draw our own conclusions. Another correspondent, an architect, writing with the greatest admiration as to the uncompromising tone of Mr. Jackson's first letter, asks why, if Mr. Jackson feels so strongly on the subject, he stands aloof from the Institute of Architects, a body which makes it a special condition of membership that its members should have no pecuniary concern of any kind in building materials or patents? That is, perhaps, a question to be asked, though the answer to it may be a more complicated one than our correspondent would anticipate. We may ask, however, whether the Institute really presses this point as strenuously as it might. We remember a former President of the Institute stating roundly, at one of the meetings, that if the name of any member of the Institute who had accepted trade commissions were brought before him, and the fact proved, he would pledge himself that the name of that member should be struck off the list. Is the Institute prepared at this moment to go to that length?

THE collection of objects excavated by Mr. Flinders Petrie at Kuft, the ancient Koptos, and now on view at University College, is of great interest, especially as some portions of it are supposed to represent an earlier phase of Egyptian art than any remains previously known, though we are inclined to accept with caution some of the very positively worded deductions which have been drawn from this find. If the conclusion is accepted that Koptos was the point of entry into Egypt of the race subsequently known as the Egyptians, and their probable first place of settlement, the remains found there acquire, no doubt, a peculiar interest. The sculptured slabs numbered 2 and 3 are remarkably fine examples of that intaglio relief, as it may be called, peculiar to Egyptian art, in which the surface is sunk around the design, which is in relief in regard to the sunk surface. The execution of these slabs, which have been preserved in a remarkable degree of sharpness in consequence of having been buried face down, is very fine, and (except the usual incorrect treatment of the eye) the action is remarkably energetic and natural for Egyptian sculpture. If the date of this work is really, as Mr. Petrie thinks, anterior to that of any Egyptian sculpture hitherto known, it opens up a new vista in regard to the history of Egyptian art-work, and leaves some of the hitherto known work in the position, not of accomplishment, but of decadence. We cannot help thinking, however, that there is a good deal to be

proved before this position can be confidently accepted. Other exhibits from the same site include sculptured slabs from a temple by Antef V. of the eleventh dynasty; a collection of fragments of very ancient pottery; a number of small objects, ornaments, small vases, cubes of stone gilded (were these for any ornament analogous to mosaic?), and many others. As the result of a few weeks' excavation the exhibition is very encouraging to those who have the ambition to try their luck on unexplored sites. It will remain open from ten to four until the end of August. We may have more to say in reference to it.

THE new nave of St. Saviour's, Southwark, the walls and roofing of which are now completed, was open for inspection to privileged visitors on Saturday afternoon last. The architectural treatment continues in the main that of the ancient choir, with some differences of detail, the most noticeable of which is the employment of marble shafts for the outermost order of the triple vaulting shafts, those in the choir being executed entirely in stone. The interior is completely bare at present, and the floor in a rough state, but the architectural effect of the whole can be judged of, and appears very solid and monumental. The building appears now with almost the proportion and effect of a minor cathedral, internally at all events. It is proposed to remove the monument to "the moral Gower," which at present stands in a niche in the south transept, to the situation which it formerly occupied in the old nave. Another interior alteration which Sir A. Blomfield proposes to carry out is to raise the roof over the crossing, thereby bringing to view a wall arcading which is now hidden, and to cover it with a panelled timber ceiling, using at the intersections of the framing the ancient wooden bosses of the second (wooden) vaulted roof of the nave, which replaced the first vault that fell. These bosses, in very good preservation, are now stored in the retro-choir.

THERE is a widespread feeling in Germany against the threatened submergence of Philæ and the consequent destruction or removal of the architectural remains on the island. The German Royal Academy of Arts has petitioned the German Foreign Office to make a formal appeal to the English Government on the matter.

THE Royal Archæological Institute, which this year is holding its annual meeting at Shrewsbury, opened its proceedings on Tuesday, the 24th inst., in dull, threatening weather. The Institute was formally received by the Mayor of Shrewsbury, and the President of the meeting, Sir Henry H. Howorth, K.C.I.E., M.P., F.R.S., F.S.A., delivered his presidential address. Over one hundred members and their friends are taking part in the meeting, full particulars of which we shall publish next week.

IT is announced in the *Tablet* that the idea of a competition for the design for the proposed Roman Catholic Cathedral for Westminster has been abandoned, and that Mr. Bentley has been commissioned to prepare a design. We are further informed that the scheme is to provide for a cathedral similar in many respects to the old Basilica of St. Peter's at Rome, and a Benedictine monastery, also a palace for the Cardinal Archbishop and a hall capable of holding two thousand people. All this will be very interesting in an architectural sense, no doubt, if it ever gets carried out.

IT may be asked why reference should so frequently be made to legal decisions in regard to the sanitary state of houses. The answer is that it is only by keeping in prominence the fact that these decisions are increasing in number that it is possible to estimate the force of public opinion on this important subject. Thus the case of Popham *v.* Davis, which was tried in the Westminster County Court last week, is noticeable as showing very distinctly the set of public opinion in favour of greater sanitation. It was an action by a landlord for his rent, and in this action the defendant counter-claimed for damages for ill-health caused and expenses incurred in consequence of the insanitary condition of a house, 8, Exhibition-road, Kensington. The jury found by their verdict that the drains were warranted sound, that they were not sound, and that the defendant was induced to take the house in consequence of such warranty; and they gave her 75*l.* damages. The amount claimed for rent was also 75*l.*, so that it is clear that the jury practically set off the damages against the rent. This is somewhat rough-and-ready justice, but it is satisfactory from a public point of view, inasmuch as it shows that a County Court jury is willing to give damages for injury caused by an insanitary house. The class of persons who form such juries is usually the least inclined to set value on good sanitation, so that this case is a hopeful sign of the times.

FROM the report of a recent meeting of the Huddersfield Town Council in the *Huddersfield Examiner* of July 21, we observe that the Council had obtained fifty-six designs in competition for the new Infectious Hospital at Mill Hill, and that an architectural adjudicator (appointed by the Institute of Architects) and a local doctor were to act as joint adjudicators on them. It is to be hoped that the plans will be publicly exhibited, for all professional adjudicators are not infallible in this class of buildings, as we have had occasion to know.

THE question put to the Home Secretary on Tuesday night (24th inst.) in the House of Commons, by Mr. D. Thomas, as to the reorganisation of the Department of Mines at the Home Office, deals with a subject in which quarry-owners take a deep interest, and is not without its bearings from the architect's point of view, as tending to control the supply of building stone. He inquired whether the Government proposed asking for additional statutory powers to enable the Department to collect and publish accurate information with regard to mines and minerals. The Home Secretary replied that, amongst other things, he had appointed three additional inspectors under the Metalliferous Mines Act with a view to the inspection of quarries. Now, this is all very well so far as it goes, and we ought, no doubt, to be thankful for any improvements in the direction indicated. But, judging from the proceedings detailed in the recent report of the "Quarry Committee of Inquiry," the ideas of the Home Office in regard to the nature of a stone quarry are limited, almost entirely, to one in which slate is obtained. No one who knows the slate quarries of North Wales will suggest that the inquiry was unnecessary —by its means a mass of useful information was brought together; but the conditions under which slate is quarried and worked differ widely from those obtaining in stone quarries, though the Committee did not go much into this matter except in reference to certain "road stones" raised in the neighbourhood of Penmaenmawr. If the Home Secretary seriously imagines that three additional persons can adequately inspect all the quarries in the kingdom he is vastly mistaken. As the matter is "still engaging his attention," however, we trust he will further consider this point, though there is little probability of the number of inspectors being materially increased. Whilst engaged on this matter he might also pay some attention to the present loose method of collecting mineral statistics, and to the ridiculous manner of setting out the same in the annual reports. There is, we admit, considerable difficulty in obtaining really reliable statistics in some quarters, as stone merchants not unnaturally resent any enquiry into their private affairs, especially when they know that the figures will be published. But it is quite possible for the Home Office to obtain and give particulars without publishing too many details, and the Inspectors of Mines might be reminded, in sending in their reports, or the authors of the "mineral statistics" might be informed in collating them, that silver-sand is not "stone" any more than is yellow clay, gravel, shale, chert, calc-spar, and the like, and that these various substances could with advantage be separately dealt with. Further, that the purposes for which a rock is quarried might be specified—if a limestone, for instance, as to whether it is used for burning into lime, or as a building stone, or as road-metal, or as marble, so that in future we may be able to obtain what Mr. Thomas in his question rather satirically dubbed "accurate" information.

IN the construction of scientific instruments of precision it is generally essential to be able to prepare straight-edges of very great accuracy, and those who are engaged with such work will read with pleasure the interesting paper in this month's *Journal* of the Franklin Institute, written by Mr. F. L. O. Wadsworth, in which he describes an optical method recently adopted for such purposes, which has been attended with considerable success. It is possible with the apparatus which he adopts to make straight-edges, at a moderate cost, from 5 ft. to 10 ft. in length, or even longer if desired, so that so that the maximum error does not exceed $\frac{1}{100000}$ of an inch in their whole length. To arrive at this degree of accuracy by the ordinary method would require an expenditure of time which would cause the work to be impracticable as a commercial undertaking. It is, of course, most important that the material used in the construction of such straight-edges is as homogeneous as possible. The same number of the Franklin Institute *Journal* also contains the first portion of a paper contributed by Mr. Alfred R. Wolff, on "The Heating and Ventilation of large Buildings." By means of a diagram the author shows the co-efficients of transmission of heat per hour for each square foot of different classes of materials composing buildings, due to various differences of internal and external temperature. This diagram is based upon the requirements of the German Government, which are observed in designing heating apparatus for public buildings.

THE last annual report of the Department of Public Works of New South Wales* gives information as to the nature of the work which has recently occupied the Department. One hundred and twenty-nine miles of railway had been completed during the year under notice, and trial surveys made for a good deal more, which could not be proceeded with at present for want of funds. The improvement and maintenance of harbour works and river navigation, mainly by means of dredging, has occupied a good deal of attention and a considerable amount of work has been done in deepening the channels of rivers. In the Government Architects' branch, the necessity for retrenchment has precluded the accomplishment of much in the way of new buildings, and the architect complains of the inadequate amount granted for maintaining the public buildings of the colony in systematic repair. The only important contract for a new building which was let during the year was for the completion of the Sydney Hospital, from the designs of Mr. John Kirkpatrick, architect, of Sydney. An engraving of this building is appended to the report, but no plan, without which one can hardly judge of it. In the department of roads and bridges a considerable amount of work had been done, at an expenditure of 1,103,000*l.*; three hundred and sixty-six bridges having been built during the year. The most important of these was the bridge

* The report is for the year 1892, but was ordered to be printed in October, 1893, and has only just reached us.

over the Lachlan, at Cowra, of which some illustrations are appended to the report. In regard to the water conservation and irrigation branch the Chief Engineer points out that the delay in passing an Act dealing with water conservation, irrigation, and drainage is a very serious matter for the colony; and that in the absence of legislation dealing with riparian rights the construction of works for conserving and utilising water cannot be proceeded with. The system of surveys recommended by the Royal Commission on the conservation of water is, however, approaching completion, and the department is now in possession of the information necessary for dealing with the available supplies of water in the western rivers. One gratifying result in regard to water supply has been the unexpected success of a trial artesian boring at Comonable, which was stated by geologists to be beyond the boundary of the cretaceous strata in which artesian borings can usually be applied with success. The experiment, however, has resulted in an ample flow of water, in a locality where, as we gather from the report, it was very much needed.

ECCLESHALL CASTLE, near Stone, in Staffordshire, will be shortly offered for sale. Of the old palace of the bishops of the Mercian see, nothing, we believe, remains now except a bridge across the moat, and an ivy-clad tower. In the Conqueror's time the manor belonged to the bishops of Coventry and Lichfield; King John licensed Bishop Geoffrey de Muschamp to lay out a park at Brewood and embattle Eccleshall Castle. In 1310 Bishop Walter de Langton, Lord High Treasurer of England, rebuilt the castle for his principal residence, in addition to those at Heywood, Brewood, Beaudesert, and in London.* The castle was garrisoned for Charles I., but on its surrender was sacked and made quite uninhabitable. In 1695 Bishop Lloyd rebuilt the south front, and thenceforward the Castle was occupied, until Bishop Lonsdale's death, by his successors, of whom Hough planted the grove and Cornwallis drained the grounds and land around. Bishop Lonsdale (1867) and five of his predecessors were buried in Holy Trinity parish church, restored, as a token of respect for Lonsdale, in 1866-8, by Street, at a cost of between 7,000*l.* and 8,000*l.* The builder was Cobb, of Newport. Soon after the restoration a fire consumed the interior of the north aisle, and part of the nave. On November 7, 1868, we gave a report of an inquiry into the origin of the disaster, attributed to the ignition of a beam that communicated with the flue of the heating apparatus. In the choir south aisle, Lichfield Cathedral, of which he was a great benefactor, and where he began the Lady Chapel, is a recumbent effigy of Langton, who died in 1322. His successor, Roger de Norburgh, *obiit* 1359, finished the Lady Chapel, for which Langton had provided the money, rebuilt the Presbytery, and erected the central gable of the west front and the two western steeples. On October 15, 1892, we described the progress that had been made with the cathedral's restoration, upon the report of Mr. Pearson, R.A.

THE incumbent of (old) St. Luke's, Chelsea, desires to purchase for 100*l.*, by subscription, the chapel in the north aisle which is named after Thomas Lawrence, goldsmith (*ob.* 1593), and wherein members of that family are buried. He says, in a letter to the *Times*, that the chapel was built, *circa* 1350, by the lord of the manor, and that it is private property, freehold, transferable under purchase or gift. Some years ago a corresponding chapel in the south aisle, built by Sir Thomas More, in 1528, as an appanage of his "pore howse in Chelcith" (since Beaufort House) was bought from the executors of Mr. Crew, for 100*l.*, and transferred to the church trustees; it is proposed to acquire the north chapel in the same way. Beaufort House, which Henry, Duke of Beaufort purchased from the Earl of Bristol's widow (1682), was bought in 1738 by Sir Hans Sloane, who two years later pulled it down, giving the gateway, designed by Inigo Jones for Lord Cranfield, to Lord Burlington, who took it to Chiswick. Henry VIII., some say, gave the earlier manor house, near the church, to an ancestor of Thomas Lawrence, whose descendant, *temp.* Charles I., restored the More monument, and after whom Lawrence-street is named.

* Originally within the City wall, bought by Bishop Hugh, *ob.* 1198. Roger de Meyland removed to the Strand "inn," which, with those of Llandaff (*teste* Fuller) and Worcester, the Duke of Somerset demolished.

THE architectural work in the exhibition, now being held at the South Kensington Museum, of students' work for the past year is not of exceptional interest. There are many good drawings, but in many cases the undoubted care that has been spent on them has been thrown away on subjects, and in others a good subject has been spoiled by scratchy execution, or an undue effort to put in shadows, where a simpler treatment would have been more effective. We noticed more particularly among the large number of drawings and sketches: An Elevation of the Rood-screen at Glasgow Cathedral, by Mr. Albert H. Hodge; two elevations in ink-line of the West Fronts, inner and outer, at Bolton Abbey, Yorkshire, by Mr. Wm. Longbottom; a set (poor in execution however) of the Lady Chapel at Lichfield Cathedral, by Mr. Wm. C. Green; the fine screens of wood at Dunster Church, Somerset, by Mr. W. J. Symes; and the Russell Chantry at Lincoln Cathedral by Mr. A. E. Turner. The detail of the pulpit in the old refectory at Beaulieu, Hants, forms a series of drawings by Mr. J. A. Swan, and Mr. A. J. Dunn sends a large quarter full-size pencil drawing of the well-known sedilia at Hawton, Notts, remarkable for the delicacy of its figure-work and foliage. Most of the original designs are very poor, but one of a residence by Mr. A. Hodge, although the general design is very eccentric, has some very clever figure-drawing in one of the sections. The general effect of this is that the drawing has been made to show the capabilities of the designer more as a figure-draughtsman than as an architect. We notice one or two designs also which have been seen before at the Institute in Conduit-street. In the section for studies of historic styles of ornament, Mr. A. J. Dunn sends an interesting half elevation of the reredos in the Lady Chapel at Gloucester, with details of the colour decoration; Mr. H. C. Wallis a set of drawings illustrating the mosaic pavements of the Roman Villa at Bignor, Sussex; and Mr. J. W. Vinall a sheet of very suggestive drawings of aquatic fauna, showing their decorative capabilities. There are the usual large number of pen-and-ink drawings for menu cards and book-plates, of varying merit, and designs for mosaics, in which the lady competitors easily take the lead (we noticed two examples by Miss Foster and Miss Trower). The exhibition generally may be said to be an average one, although the architectural division does not show any great promise.

THE annual address of the chairman of the London County Council is rather a trumpet-blowing document, but we can at least entirely concur with his remarks in regard to the water supply question, to the effect that the report of the Royal Commission is of the most unsatisfactory and conflicting character; that the more one knows of the subject the more difficult it is to agree with the finding of the Commission on many important points; and that "the appropriation of more water from the Thames, instead of affording a permanent settlement of the water question, only postpones the grappling with it for a few years, when every difficulty with which the question is surrounded must be enormously increased." We have already urged this argument in the strongest manner; and perhaps in time the force of it will be a little more generally recognised.

THE CAMBRIAN ARCHÆOLOGICAL ASSOCIATION AND THE ROYAL SOCIETY OF ANTIQUARIES OF IRELAND AT CARNARVON.

THE second excursion, on Wednesday, July 18, was in a south-westerly direction, along the high-road from Carnarvon to Pwllheli as far as Llanaelhiarn (a distance of fourteen miles), going and returning the same way. The carriages started from the Castle-square, Carnarvon, at 8.30 a.m. On the outward journey a stop was made at Clynnog Fawr (ten miles south-west), and on the return journey a deviation from the high-road of a mile-and-a-half to the westward was made, at a point five miles south-west of Carnarvon, to Dinas Dinlle. The ascent to Tre'r Ceiri was effected from Llanaelhiarn.

The weather was cold, with showers at intervals, and the tops of the higher mountains were enveloped in mist throughout the day. Along the whole route beautiful views were obtained of Carnarvon Bay on one side and the mountains lying to the south-west of Snowdon on the other, whilst in front were the three conical peaks of Yr Eifl, more commonly known as *The Rivals*.

The collegiate church of Clynnog Fawr is on the west side of the high road, about half-a-mile from the sea-shore, and is well sheltered by trees. The earliest account given of the foundation of a church at Clynnog is in the legend of "St. Beuno," published by Bishop Fleetwood in his "Life of St. Winefred," and in translations from the original MS., preserved in the library of Jesus College, Oxford. It is said that when Cadfan, king of North Wales, died, St. Beuno went to visit his son and successor to the throne, Cadwallon, who granted him a place in Arvon, called Gwaredog, receiving in exchange a golden sceptre worth sixty cows that had been presented to St. Beuno by Cynan, son of Brochwel.

St. Beuno's title to this land being disputed, Gwyddeint, cousin-german of Cadwallon, gave to God and Beuno, for his soul and for the soul of Cadwallon, the town of Clynnog for ever. Clynnog Fawr is said to have been founded in A.D. 616. St. Beuno was related to Cattwg and Kentigern. His festival is April 21. In the Taxation of Pope Nicholas, A.D. 1291, the clerks then resident at Clynnog are termed "Portionists," and therefore formed a collegiate body. In the Extent of the County of Carnarvon, made in about the twenty-sixth year of Edward III., it is stated that the will of Chynnog is held freely of St. Beuno, though certain payments are admitted as due from it to the prince.

The architectural features of Clynnog Fawr church were ably described by Mr. Harold Hughes. The ground plan (see "Archæologia Cambrensis," 1st series, vol. iii., p. 247) is cruciform, with a western tower; a porch on the north side of the nave, and a sacristy on the north side of the chancel. There are no aisles. The extreme outside dimensions are about 150 ft. from east to west, and 75 ft. from north to south. St. Beuno's Chapel is a rectangular building, 50 ft. long by 31 ft. wide outside, standing apart from the church on the south side of the tower, with which it is connected by a covered passage. The axis of the chapel is not parallel to the church, reminding one in this respect of the plan of Cormac's Chapel on the Rock of Cashel, in Ireland. The church, which is the finest in North Wales, is all built in one style (Perpendicular) and St. Beuno's Chapel is also of the same date. The vaulted passage leading from the tower to the chapel deserves a more careful examination than was possible on such a hurried visit. The roof is of stone, and some of the members present were inclined to assign an earlier date to it than to the rest of the building.

In the church are preserved three objects of exceptional interest:—(1) St. Beuno's Chest, hollowed out of a solid log of oak, and having a lid secured by three locks; (2) a pair of iron dog-tongs, dated 1815, used for forcibly ejecting unruly canine worshippers from church; and (3) a mazer* bowl of wood with a silver mounting inscribed—

"TU NAZARENUS REX JUDEORUM FILI DEI—MISERERE MEI."

It was formerly a custom in the parish to bring to the church as an offering calves and lambs born on Trinity Sunday (the anniversary of St. Beuno) with a natural mark on the ear, known as "Nôd Beuno," or St. Beuno's mark. The money realised by the sale of these offerings was deposited in St. Beuno's chest, and applied either

* Not a chalice, as stated in the illustrated programme of the meeting.

to the relief of the poor or to the repairing of the church.

A very similar offering chest at Old Upsala, in Sweden, is illustrated in "Sverige's Historia" (vol. 2, p. 465) and copied without acknowledgment in M. Paul du Chaillu's "Land of the Midnight Sun."

In the north transept there is a brass dated 1633.

After leaving Clynnog church St. Beuno's Well was inspected. It lies close to the road on the east side, less than a quarter of a mile south-west of the village. The well, which is retangular, is surrounded by a low wall with a seat or ledge round three sides of the well. There are some square recesses in the wall behind the seats. The well was one of those on the Pilgrims'-road to Bardsey, and the structure is similar to those at Llanaelhiarn and at Llanberis. It was used as a healing well, the patient after bathing in the water being in some cases placed to lie all night on St. Beuno's tomb in his chapel. It is certainly very remarkable how the memory of a Celtic saint, dead more than a thousand years ago, still clings to a remote locality like Clynnog, and if any proof were wanting of the great reverence in which he was held, we have it in the glorious, though now, alas! much neglected pile of buildings that has been raised over the spot where St. Beuno was buried. The existence of a cromlech with its cap-stone covered with cup-markings, a quarter of a mile south-west of the church, shows that even in prehistoric times Clynnog must have been a place of considerable sanctity. It is the only megalithic monument in Wales showing any trace of sculpture.

Llanaelhiarn church, the next object on the programme, was a great contrast to the building we have just been describing. Clynnog Fawr church has nothing in its architecture to distinguish it from an English ecclesiastical structure of the same period, but Llanaelhiarn church is characteristically Welsh, with its picturesque bell-gable and homely aspect. The ubiquitous restorer has done his best to spoil its simplicity of detail, and to bring it up to date according to his lights. An inscribed stone of the early Christian period was the subject of much discussion amongst the learned men present, including Professor Sayce and Professor John Rhys, who holds the chair of Celtic at Oxford. Notwithstanding the usual attempts to add a letter here and take away another there, until the stone was made to yield a result which should accord with the readers' pet theories, it was pretty generally agreed that the legend was as follows :—

ALIORTVS ELMETIACO HIC IACET.

Professor Rhys explained that this meant that the stone was the sepulchral monument of Aliortus, a native of Elmet, which latter place-name he compared with the ancient district of Elmete, in Yorkshire, and Cynwil Elvet, in Carmarthenshire. The stone was found about 1865 whilst digging a grave in a piece of ground adjoining the churchyard called *Gardd-y-Sant*, or the Saints' Garden, and is now fixed in a horizontal position against the west wall of the north transept of the church inside.

The great event of the day was the ascent of Tre'r Ceiri from Llanaelhiarn, which had on this occasion to be made under somewhat unfavourable circumstances, owing to the thick mist hanging about the tops of the mountains. Tre'r Ceiri is situated a mile due west of the village of Llanaelhiarn, but the cliffs are too steep to allow of its being approached from this side. The summit was reached, therefore, by proceeding on foot a mile in a south-westerly direction along the road to Nevin and then striking off to the north-west up an ancient pathway over the mountain, so as to enter the fortress at the south-west end. On a clear day the views over the promontory of Lleyn, with the sea beyond, must be extremely fine, but only an occasional glimpse of the surrounding country could be obtained when a gust of wind cleared away the mist for a brief interval. The effect produced by the long procession of archæologists winding up the mountain side, at one moment disappearing from sight in the mist, and at another making exaggerated silhouettes against the sky-line, was weird in the extreme. We have already mentioned that Tre'r Ceiri, or the Town of the Fortresses, is situated on the top of one of the three conical peaks of Yr Eifl. Seen from any point to the northward the three peaks appear to be in one straight line east and west. As a matter of fact, they are at three corners of a triangle. The central and highest peak is 1,849 ft. above the level of the sea; Tre'r Ceiri, the next highest, is 1,591 ft. above the sea, and lies due east of it between it and Llanaelhiarn; and the third and lowest peak (1,458 ft. above the sea) is situated to the north-west, within half-a-mile of the sea. The prehistoric fortress of Tre'r Ceiri occupies the whole of the top of the mountain on which it stands. The ground plan is an irregular oval with its longer axis pointing north-east, and measuring roughly, according to the 6-in. ordnance map, 990 ft. long by 370 ft. wide.

The inner wall of Tre'r Ceiri is regularly built of dry rubble, with a straight and almost perpendicular outer face. On the north-western side, where the wall is highest, there is a *chemin de ronde* or *banquet* for sentinels to keep guard upon, with the protection of the parapet. Near the sally-port the *banquet* is double. Where the wall is most perfect it measures 15 ft. in height and 16 ft. in width. The outer defences consist of low walls of rubble heaped up, not built. The whole of the interior of the fortress is filled with innumerable houses, both round, oval, and nearly square, arranged in groups. The walls are built of dry rubble, and are in some of the better preserved specimens as much as 4 ft. high.

We have devoted a good deal of space to the description of Tre'r Ceiri in order to show its unique character and magnitude. It would hardly be thought that in a civilised community it was possible for such a splendid specimen of a prehistoric city to be allowed to perish miserably, partly by neglect and partly by wanton injury. Yet stone by stone Tre'r Ceiri is being gradually destroyed. If an object-lesson were required to show the utter inefficiency of the present Ancient Monuments Act we have it here. The proprietor, Mr. R. H. Wood, F.G.S., of Rugby, applied to the Inspector of Ancient Monuments in order to have Tre'r Ceiri scheduled under the Act, but he was politely informed that the Government (one of the richest in the world, *soit dit en passant*) could not afford to incur the expense involved. Tourists and others now amuse themselves by tearing down portions of the ramparts in order to erect small cairns of stones which utterly disfigure the sky-line as seen from below. If the monument were scheduled it would be possible to reward these Goths and Vandals suitably with the two months' hard labour they most richly deserve.

The highest point, at the north-east end, is occupied by an artificial cairn of stones, probably used as a look-out post, and the ground within the walls slopes down considerably towards the south-west. Along the whole of the south-eastern side of the fortress the steepness of the cliffs forms an admirable natural defence. The wall is lower on this side, and there are no entrances or outworks of any kind. In one place there is a gap in the rampart, filled by a rock which rises above the top. Along the north-western side the slope of the ground is much less, necessitating additional outworks. The wall is higher and in better preservation on this side, and has three entrances—(1) a sally-port with a lintel, near the north-eastern and higher end of the fort; (2) an ordinary entrance between the sally-port and the south-western, or tower, end of the fort; and (3) a similar entrance, though smaller, at the south-western entrance of the fort. It was through the latter that the visitors entered. The entrances are in all cases defended by additional outworks. The Rev. E. L. Barnwell, who has described Tre'r Ceiri in the "Archæologia Cambrensis" (4th series, vol. ii., p. 71), thinks that some of the masses of stones strewn over the hill-side were placed there purposely to act as a sort of *chevaux-de-frise* to lessen the rapidity of the first onslaught of the besieging force. *Chevaux-de-frise* of this kind undoubtedly exist at Pen-Caer-Helen, near Conway, and in some of the great stone forts in the Aran Islands, off the west coast of Ireland, but it is rather doubtful if the sheets of loose stones at Tre'r Ceiri are artificial.

The party, after inspecting Dinas Dinlle, a British earthwork on the sea-coast occupied in Roman times, dined at the recently-erected hotel there, and then returned to Carnarvon, well satisfied with the result of the day's work.

The fourth excursion, on Thursday, July 19, was to Beaumaris (twelve miles north-east of Carnarvon) and Penmon (four miles north-east of Beaumaris), going *viâ* Bangor, and returning *viâ* Plas Newydd and Port Dinorwic. The total distance traversed was nearly forty miles, and the time occupied more than twelve hours. The programme was not adhered to, and the planning of the route does not do any great credit to the persons who arranged it. This excursion might have been much more easily made, as was originally intended, by steamer through the Menai Straits, landing at the various places on the way. The day was fine, and an ample opportunity was afforded for admiring the exquisite scenery of the coast of North Wales and Anglesey from different points of view, and of contrasting the rugged outlines of the Carnarvonshire mountains with the tamer, but hardly less beautiful, landscapes of Anglesey. The party left Carnarvon railway station at 8.30 a.m. by train for Bangor, arriving at 8.59 a.m. Carriages were here waiting to convey the members to Garth Point, where they got on board the ferry-boat and soon reached Beaumaris. Thence they drove to Penmon Priory, (a distance of four miles); walked three-quarters of a mile to the place of embarkation for Puffin Island, and were taken across the narrow bit of sea in rowing-boats. The return journey to Beaumaris was made the same way, and after luncheon at the Bulkeley Arms Hotel, the carriages continued their journey along the north-western shore of the Menai Straits, as far as Plas Newydd (seven and a-half miles, S.W.), and on to the ferry, a mile and a-half further. The party crossed the ferry to Port Dinorwic and took the train to Carnarvon, arriving at 8.7 p.m. On the outward journey to Puffin Island no stops were made. On the return journey stops were made at Penmon Priory Church and Cross, Beaumaris Church and Castle, and Plas Newydd cromlech and chambered tumulus. By the kind invitation of Major Hugh Williams the members were entertained to afternoon tea at Plas Gwyn, close to Plas Newydd.

All that now remains of the ecclesiastical buildings on Puffin Island (also called Ynys Seiriol and Priestholm) is a solitary tower, almost the counterpart of the one at Penmon, surrounded by foundations, which would require to be excavated if it were desired to make out the ground plan properly. The late Mr. M. H. Bloxham has claimed an absurdly early date for this tower in the seventh century, but its similarity to the towers at Penmon, in Anglesey, and Bishopstone, in Sussex, point to the eleventh or twelfth centuries as the more probable period of its erection. Both the towers at Ynys Seiriol and at Penmon have pyramidal stone roofs, and double round-headed windows in the upper storey, with a central baluster or shaft. Giraldus Cambrensis mentions a curious legend to the effect that whenever the monks began to quarrel the island was invariably overrun with mice, who only disappeared when peace was restored to the community. The gamekeeper informed some of our party that after a recent wreck on the shores of the island it became suddenly infested by rats. These obnoxious vermin have, however, now been successfully exterminated by means of poison. The three names of the island sufficiently epitomise its past history. The wild haunt of the sea-gull is chosen in the early days of Christianity by a Celtic saint as the most suitable place of retirement from the world to be found in the district; a few centuries later the piratical inroads of the Vikings make the situation untenable, and it is probably deserted; lastly, the Pagan Norseman is converted and the monks again return, this time to build a church, the size of which indicates that the danger from the sea-rovers was gone by for ever.

The architectural features of Penmon church were described by Mr. Arthur Baker, F.R.I.B.A. The plan of the building is cruciform, the north transept having been reconstructed on the old foundations during the restoration in 1855. The style is chiefly Norman, the most important features being the central tower, similar to the one on Ynys Seiriol, just described; the western arch beneath the tower, which has elaborately ornamented mouldings and capitals with rude figure sculpture; the arcade in the south transept; and the south doorway of the nave, which possesses a tympanum on the exterior, sculptured with the figure of a beast biting his tail, and some interlaced work. A curious carved figure is built into the exterior wall of the south transept, which the Irish visitors at once recognised as a "Sheela-na-gig."

When the members had assembled round the cross in the field above the church Mr. Romilly Allen delivered an address on the subject. He said that the art of the sculpture on the cross showed it to belong to the pre-Norman period, the character of the ornament being similar to that of the Hiberno-Saxon illuminated MSS. dating from the seventh to the eleventh centuries. In point of size and beauty the Penmon cross could not compare with the magnificent specimens at Clonmacnoise, Monasterboice and Kells, that were so familiar to the Irish antiquaries present. Nevertheless it possessed features of very considerable interest as throwing light on the development of so-called Celtic ornament. On one face was a typically Scandinavian pattern, resembling a chain of rings, which is found almost exclusively

on fonts in Sweden, the rune-inscribed crosses of the Isle of Man and crosses on the neighbouring coast of Cumberland. On another face was a panel containing a figure of a saint with the nimbus round the head, with a beast-headed man on each side. A similar representation occurred on the cross at Moone Abbey and elsewhere in Ireland, and it had been suggested by the late Prof. I. O. Westwood that the subject represented was Christ seized by the Jews. On a third face was a square key pattern composed of T's, placed thus ⊥T⊥T, which was also to be seen on the Maen Achwynfan in Flintshire, Llangaffo in Anglesey, and on several stones in Cheshire. There was thus direct evidence of a mixture of Scandinavian, Irish, and Saxon art, which latter was more akin to Carlovingian than to Irish art. Mr. Allen expressed his agreement with Professor A. H. Haddon in believing that mixture of race was an important factor in stimulating the intellectual faculties and producing an efflorescence of ornament in art. He did not think that the early Christian or pre-Norman art of England, Wales, and Scotland was imported *en bloc* from Ireland. It seemed to him far more probable that this particular phase of decoration, of which the characteristic features are interlaced work, key patterns and spirals, combined with zoomorphic designs in a peculiar manner, existed in varying degrees of perfection throughout Great Britain, and in some parts of Europe, from the seventh to the eleventh centuries, and that it was developed differently in different localities, a good deal depending on the relative strength of the Scandinavian, Celtic, or Saxon influence existing at a particular time or place.

Mr. Allen referred briefly to two other monuments of the pre-Norman period at Penmon, namely the cross-base utilised as a font in the church, and the shaft built into the wall of the Refectory as the lintel of a window. It was suggested that this shaft possibly was the one belonging to the base mentioned, and the desirability of having it removed from its present position and placed within the church. In conclusion, the lecturer referred to the damage the cross in the field near the church had sustained by being used as a target for rifle-shooting by stray Volunteers who had a range in the neighbourhood.

Mr. Thomas Drew, F.R.I.B.A, President of the Royal Society of Antiquaries of Ireland, spoke in reply, and dissented from Mr. Allen's theories as to the existence of Scandinavian influence in pre-Norman art.

Beaumaris church possesses but little interest architecturally. A sixteenth-century brass to Richard Bulkeley and his wife Elizabeth, and two fifteenth-century alabaster effigies of a knight in armour and a lady, are the only objects worthy of notice.

Beaumaris Castle is one of the least picturesque Edwardian fortresses in North Wales, but it contains a beautiful chapel.

The Plas Newydd cromlech and chambered tumulus are well known as being, perhaps, the most remarkable megalithic monuments now existing in the Principality.

The fourth excursion, on Friday, July 20, was by carriage to Llanberis (10 miles south-east of Carnarvon), going viâ Llanddeiniolen and Pen-y-llyn (at the north-west end of Llyn Padarn), and returning through Llanrug. On the outward journey to Llanberis church stops were made at Dinas Dinorwig (half-mile south-east of Llandeiniolen), Llys Dinorwig (two miles south-east of Llandeiniolen), Dolbadarn Castle at Llanberis, and St. Padarn's Well, near Llanberis Church. On the return journey a stop was made at Llanrug (three miles south-east of Carnarvon) to see the Roman inscribed stone in the grounds of Pantavon (three-quarters of a mile north-west of the church). Luncheon was provided at the Victoria Hotel, Llanberis. Before returning, some of the party drove about two miles beyond Llanberis, towards Capel Curig, for the purpose of enjoying the beautiful scenery of the Pass of Llanberis.

Dinas Dinorwig is an ancient British earthwork of oval shape, measuring about 400 ft. by 380 ft. internally, and defended by a formidable double rampart. The strategical position is an important one, as being on sufficiently high ground to command a view of the whole of the surrounding country which lies between the mountains and the sea. A plan and description, by Professor C. H. Babington, will be found in the "Archæologia Cambrensis" (3rd series, vol. vii., p. 236). Dinas Dinorwig was probably used as a military post on the Roman road from Conovium (through Aber) to Segontium, and it was here that the Roman inscribed stone now in the grounds of Pantavon, near Llanrug, was discovered some eighty years or so ago.

Llys Dinorwig now shows very little trace of having been an ancient site, and was hardly worth visiting.

Dolbadarn Castle is a solitary round tower, with a rectangular excrescence at one side, situated on a hillock at the north-west end of Llyn Peris, and built by Edward II. to guard the mountain pass. On the opposite side of the lake the whole face of the cliff is cut into terraces by the great slate quarries, which utterly destroy the beauty of the scenery. Whilst the visitors were inspecting the castle, the blasting operations produced a miniature thunder, which reverberated from rock to rock till the last feeble echo died away in the far distance.

Llanberis church is small and uninteresting. Some of the graves in the churchyard are planted with box-trees, clipped into the shape of a rectangular block, with a cross in relief on the upper surface. Considerable excitement was caused amongst the members at the Saints' Well, near the church, by the ineffectual attempts made to dislodge the trout which is known to inhabit it from his hiding place. In vain was the fish tempted by worms dropped into the water, and walking sticks poked into the furthest recesses of the structure built round the well were equally unsuccessful in inducing him to appear before so learned an audience. The non-appearauce of the fish is said to be an evil omen.

The proceedings of the meeting practically came to an end with the evening meeting at the Guildhall, on Friday, when papers, with limelight illustrations, were read by Mr. J. L. Robinson on the "Progress of the Antiquarian Photographic Survey of Ireland," and by the Rev. Denis Murphy, S.J., on "Irish Art as shown on Irish Crosses." Albums containing the photographs already taken for the survey were exhibited, and a device explained which allowed of the rearrangement of the order of the series at any time.

Most of the members of the Irish and Welsh societies left Carnarvon on Saturday morning, but some stayed behind to see the castle, Llanbeblig church, and the site of Segontium.

BRITISH INSTITUTE OF PUBLIC HEALTH:

ANNUAL CONGRESS.

THE annual Congress of the British Institute of Public Health, which is being held at King's College, London, commenced on Wednesday, when a reception took place at King's College. The real work of the Congress, however, began on Thursday, when the Presidents of the various sections delivered their addresses.

The address to the Section of Engineering and Building Construction, was delivered by Professor Banister Fletcher, F.R.I.B.A., J.P., D.L., President of the Section, who said:—"The duty of the President in this section in his Presidential address appears to be of two kinds. *Firstly*, to summarise what advancements have taken place; and, *secondly*, to indicate what improvements are still desired. Probably no more useful work can be attempted than bringing defects before this large Congress, all of whose members are deeply interested in sanitary science, especially that part of it which belongs more properly to our own professions. With regard to the first part—viz., what has been done—in the limited time at my disposal I can only briefly give a mere outline sketch. The Public Health Act, London, 1891, did in a large measure for the Metropolis what the Public Health Act, 1875, did for the rest of the country. It consolidated a large number of statutes hitherto in force in the Metropolis relating to Public Health, and introduced important alterations in the existing law. An important feature in the new statute being the powers and duties entrusted to the London County Council, they were empowered to make by-laws for many purposes, and to them was entrusted the power of taking action in the event of any default by any Sanitary Authority other than the Commissioners of Sewers. The Act deals extensively with the offensive trades, entirely forbidding some, and requiring the sanction of the London County Council for others. It abolishes the duties formerly incumbent on occupiers of premises to sweep and cleanse footways and water-courses. Another important provision is that if the water-company cut off the water supply from any dwelling-house they must give notice to the Sanitary Authorities. Any person may now give information of a nuisance to the Sanitary Authority, and such Authority is required to serve at once a notice causing the same to be abated. Sanitary Authorities are bound to secure the due removal, at proper times, of house refuse, &c., from premises; and if not done after forty-eighty hours' notice, the offenders are liable to be fined 20*l*.

The London County Council General Powers Act, 1890, gave a person power to appeal against the certificate of the superintending architect as to line of frontage, to a tribunal composed of a member of the London County Council and one member of the Royal Institute of British Architects, and one member of the Surveyors' Institution. It also gave the Council power to make by-laws with respect to materials and plastering, &c.; and limited the height of buildings to 90 ft., exclusive of two stories in the roof. The London Sky Signs Act forbade the future erection of these monstrosities, and will eventually cause the remaining ones to be taken down.

The London Streets and Buildings Bill, which has every likelihood of becoming law, is a Bill to consolidate and amend the enactments relating to streets and buildings in London. The idea is to repeal the thirteen Acts under which at present all buildings are regulated in London, and to form a new Act which will embrace the regulations in these Acts and embody other regulations of great importance. This Act is at present liable to so many alterations in the House of Lords that I will not mention it further, except to say that it seems to me to be an Act that is much required, though I cannot agree with some of its proposed regulations. It is self-evident that you may make the most perfect rules and by-laws and yet not have good buildings, unless those whom you appoint to supervise *do themselves understand* how the work should be done. I would lay stress on this, because it has too long been considered that anyone can be a Sanitary Inspector. The principal, for at least the most important, duties are those of seeing that buildings are properly built, and the drainage work properly executed with proper materials, and clearly the best man for such work is one who has been practically brought up in the building trades. It is far easier, I venture to think, for such a man to learn when he should condemn bad meat, and those other duties he has to perform, than for the man who may know such matters to learn the building trades. It is too often overlooked that the Medical Officer of Health is the real authority, and that in the "Sanitary Inspector" he requires a man so skilled that he can see that the work ordered is carried out in a proper and workmanlike manner. In the past many of you have found Inspectors of Nuisances, as they were called, ordering certain traps and closets, and without having the faintest idea of how they should be fixed—satisfied if only they saw the name on the article; while, as you know, the proper fixing is most important. One other advance I have to record—the examination of Sanitary Inspectors which is required by Government, and which commences next year. Undoubtedly this should place the carrying out of the sanitary requirements upon a better, more uniform, and intelligent basis. I hope the Sanitary Inspectors may continue to make London their headquarters, read papers and have discussions, and thus keep themselves well informed as to all the new inventions and improvements in building. I believe, should more room be required for the use of their Association, the Worshipful Company of Carpenters will try to meet the requirement. While singing congratulations on this good progress, I regret I must call your attention to what I venture to think is a serious drawback to good sanitary building. It is, that there is no one Authority dealing with the subject. At present each man is a law unto himself, and Vestries and Local Boards have rules and regulations differing from each other. I will not weary you with illustrations, as we have a discussion on this subject. My hearers know only too well how curious are the variations—how one kind of "closet," "pipe," or "trap" can be used in one district, while in others it is not permitted. Again, if the requirement is fought, often no amount of scientific and practical knowledge will convince one Court, and yet again, in another Court, it will be accepted. Surely this must be wrong; it leaves sanitation so uncertain, and really prevents all advance. What appears to me to be wanted is one simple permanent Court of Appeal, which should sit whenever cases wanted its decision, and should be composed of two persons, or certainly not more than three. I would suggest for your consideration that, if only two, then one should be a medical man who has had to deal with sanitation, and the other an architect or engineer; if a third

is desired, he might be a barrister. One point I want just to say a few words about—it is the great drawback of the present Courts—viz., the long delays. I would, therefore, insist that the cases should go on from day to day until ended, and that the Court should form the body required under the new London Streets and Buildings Bill, for that Bill has, in my opinion, as it now stands, a very complicated, changing, and expensive tribunal.

In regard to *drainage* and the method of ventilating public sewers, about which so much has been written of late, I note the idea of Mr. Ernest van Putten, in the *Builder*, who says, "that the interceptor is a small cesspool, and that the house-drain contains deposits of soil uncovered by water, and is consequently more foul than the public sewer, in which the flow is always proceeding;" and he goes on to say, "the liability to stoppage in the interceptor is greater than in the straight drains; and that in Lewisham, where not more than 1 per cent. of the house-drains have interceptors, the annual death-rate has been exceptionally low for many years." Doubtless, intercepting traps may interfere with the flow, but we know their value in other respects, not the least important of which is the inrush of rats from the main sewer. The question of ventilating the public sewers is one which necessarily brings itself before us during this exceptionally hot weather, and it is a question worth discussing whether, instead of the gratings at the street level, ventilating pipes should not be carried to the ridge level; though the question of expense seriously militates against this. Mr. Bernard Dicksee has again raised the well-worn question, not of the interceptor, but of the size of the drain-pipes. It appears to me, as it does to most sanitarians, that for an ordinary house with, say, three closets, 4 in. is not only sufficient, but more cleanly and less expensive. More experiments under this head would doubtless be beneficial. There have been many patent innovations in drain-pipes and joints, but it is doubtful whether, for a long time to come at any rate, well-made brown-glazed stoneware pipes, with cement joints with hemp filling, properly laid on an even bed of well-rammed concrete, can be surpassed, though, perhaps, under a house, the 6 ft. lengths of cast-iron drain-pipes, glazed internally, with caulked junctions encased with concrete, are preferable.

With regard to the carcase and fittings of an ordinary building, and the necessity of using only the materials which are most conducive to the sanitary condition of the structure and the inmates, we might profitably dwell for a short space. Our first care should be to have bricks as little porous as possible, consistent with strength and weathering qualities. The power of building nine-inch brick walls in upper stories is surely not conducive to the dryness of the fabric. This is permitted in London, but not in the country under the municipal by-laws. I am glad to see that the plastic asphalte damp course has almost superseded the old slate damp course with its liability to fracture, the former being also of incalculable service as a vertical damp interceptor. These precautions, together with the covering of the site with six inches of concrete, should prevent saturation of the building by damp being drawn upwards. We have the danger of dry-rot by not properly ventilating our floors, but even when attempted, I would call attention to the slip-shod way the air bricks are often placed, with no regard to the necessity of a through current of air, the latter being often stopped by a sleeper-wall. I have even seen air-bricks so placed at the ground-level that their only use was to convey water into the interior of the building. With regard to the chimneys, I wonder how long we shall continue to have the old 14 in. by 9 in. flues formed of brick, and sometimes improperly parged, when it has been so clearly demonstrated that it is impossible to clean the angles, and when an ordinary 9-in. unglazed drain-pipe is so much preferable in every way, as no contraction can take place at the angles in building the flue, and the sweep's brush fills and cleans the whole aperture.

In regard to the construction of floors, one wonders how much longer we shall continue to construct the ordinary timber floor with the space between the boards and the plaster ceiling, a receptacle at once for dirt and vermin, the former intensified by the weekly wash of the charwoman's dirty water, which, even if avoided by pugging, renders the floor timbers very liable to dry rot. It seems to me that a building, to be thoroughly sanitary, especially in the Metropolis, should have fire-resisting floors, with wood-block flooring in immediate contact with the concrete, and that these should be cleaned, not with water, but with turpentine, which is a disinfectant. The above is especially required in the construction of flats now arising throughout London, where so many people are under one roof. The old quarter partition, with its space for the agglomeration of filth, and in fact all dirt-collecting construction, should surely be avoided, and in its place the new 3-in. concrete partitions, for which so many patents exist, are much to be preferred. The ordinary breeze concrete, with iron uprights, is, perhaps, as good as any, and cheaper than all.

With regard to finishing, the new by-laws of the London County Council as to plastering are to be commended, and it appears to me that they might well go further and require that all ground-floors and basements should have skirtings of solid cement, instead of the ordinary wood skirting, which too often harbours the dirt in the space behind it.

Having now dealt with the building, let us consider the plumbing and water supply. With regard to this, I consider much improvement necessary, and special efforts, to my mind, should be directed to obtain a Court of Appeal to ensure greater uniformity. For instance, for some years almost every Local Authority insisted on the "wash out" closet as the most perfect; to-day it stands condemned as foul and unhealthy, and thousands and thousands of houses have been fitted with this form of closet. To my mind, there is no doubt that the best form of closet for a private house is the valve closet, *provided always* that every part of its construction is the best of its respective kind. If expense prevents this, it is far better to employ an ordinary "wash-down" closet fitted with water waste preventer and a three-gallon flush. There are many who advocate this quantity of water, and the fact, I think, we should impress upon the Legislature is that wasted water is not an unmitigated evil. As my friend, the late Sir Edwin Chadwick, so earnestly advocated many years ago, one ought to get a volume and great rapidity, so as to force all matter through the pipes; but water will do good, even by passing away in small quantities. The improved joints with brass ferrule for the connexion of the apparatus with the soil-pipe leaves little to be desired. Baths, lavatory, basins, and other fittings of this type should be left free from any so-called casings, so that light and air may play their important functions undisturbed. As to disinfectants, though we ought to place no material reliance in them, we have found in the Commission of Sewers that the free use of the deodorants over the roadways, and especially those laid with wooden blocks has entirely prevented nuisance arising from the droppings of animals and other sources of polution. . . . I think it my duty to mention, before leaving this portion of the subject, the important question of wall coverings. The sanitary paper was, no doubt, an improvement on the old papers, containing arsenic, &c.; but the more recent inventions of the papier-mache and lincrusta type, which are non-porous and practically everlasting, are well worth the additional outlay, both from a sanitary and artistic point of view. . . .

As a sanitary necessity of the first class we all believe that cleanliness is next to godliness, and therefore many visitors to this great city, after having inspected the various buildings and works, will be surprised at the absence of swimming and other baths. I have now for some years tried to have this defect removed, and at meetings have moved resolutions, which have been carried unanimously, calling on the Corporation to undertake this work. At the Court of Common Council I have also advocated this step, citing as an instance that Rome (not popularly supposed to be a cleanly city) had her great baths of Caracalla and Diocletian, &c. I have been met by two arguments:—1. That outside the City the various parishes had erected baths and washhouses. 2. The great cost. I admitted the first, because not only have the vestries done their duty in this respect, but my own City Company has built one of the largest swimming-baths in London, at Stratford; but I pointed out not only were more baths required, but it was unfair to force the City people to these baths, which were required for their own inhabitants, and that the City should provide them for their own schools and residents. As to the second reason, I urged that the outlay might be extended over many years, and that now the Tower Bridge is completed, the Corporation had no creative work in hand. I am hopeful this Congress may urge forward the Corporation to desire to confer a grand scheme, a monumental scheme, so that, when erected, our baths shall be the admiration of all cities.

Next to our houses and sewers, the sanitary condition of our streets seem to claim an important place. We have, I believe, no paper dealing with the most sanitary material for the making of our streets; but after your experience here in London for a day or two, you will perhaps be inclined to think that wood, possessing the porous qualities it does and giving out unpleasant odours, is not the best material, though, perhaps, it is possible to invent some composition to impregnate the wood and so prevent the porosity. Asphalte from a sanitary point of view being impervious, is undoubtedly the most fitted, but from a humanitarian view can scarcely be commended. It seems that here, at least, is a great opening for the inventive genius of our engineers.

Next to the paving, the keeping of our streets clean must claim our attention. This brings to my mind the recent experiments at Worthing, of sea water for flushing the sewers and watering the streets, and this brings before us a much bigger question, the supply of sea water to London for bathing. Speaking from memory, I think I am right in stating that a company was started, some fifty years ago, to bring sea water from Brighton, and a portion of the works were carried out, but the project was abandoned for a reason I cannot remember. Providing it is practical—and now nothing seems impossible to our engineering *confrères*—I can scarcely conceive of a greater benefit to our five million inhabitants than a double supply of water; because having the second supply, viz., salt water, the present sources of fresh water supply would remain sufficient for all time, thus avoiding the expense of the proposed idea of bringing water from Wales. It is clear that with regard to its advantages and disadvantages, more experiments are requisite before a decision could be arrived at, and, of course, information is required as to the practicability, having regard to cost and other considerations. . . ."

We shall report the other proceedings of this section of the Congress in our next issue.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring Gardens, Sir John Hutton, Chairman, presiding.

The Chairman's Annual Address.—The first business was the delivery of the annual address by the Chairman, in the course of which he said that the report of the Bridges Committee dealt with some interesting facts in connexion with the Thames bridges and recorded what might be regarded as the fairly satisfactory progress of the Blackwall tunnel. The contract amount for that work was 871,000*l.*, and the estimated value of the work executed up to the end of the financial year was 268,773*l.* The working under compressed air in that great engineering feat was proceeding practically without accident. The pressure at present used was about 20 lb. above the normal atmospheric pressure. The Woolwich ferry returns continued to show increased traffic. 3,710,822 passengers and 272,764 vehicles used the ferry during the year, so that, roughly, in fifteen months the ferry carried the population of London. Due diligence was shown in the carrying out of the regulations under the Thames River (Prevention of Floods) Act. The reconstruction of Vauxhall Bridge, which it was proposed to include in the Council's Improvement Bill, to be submitted to Parliament in the session of 1895, was estimated to cost 454,000*l.* The bridge would be 80 ft. wide, and provision would be made for the construction of a tramway, thus bringing Vauxhall and Victoria railway stations into easy communication. The rebuilding of Lambeth Bridge must, the Committee said, follow at no distant date. The Building Act Committee continued to be presided over by Dr. Longstaff with distinguished ability. The amendment of the building law under the title of the London Streets and Buildings Bill now before Parliament would, he hoped, soon become an Act of Parliament. No less than 6,286 cases of dangerous buildings were dealt with last year. Regulations had been made whereby the height of hoardings used for advertising purposes around vacant land had been restricted to 12 ft. He wished, instead of the hoarding for advertising purposes round vacant land, owners would follow the practice of the Council, the Commissioners of

Sewers, and a few large owners of land, and erect a palisade fence and prohibit bill-sticking. Two hundred and forty-seven sky-signs had been taken down, and 169 licenses for sky-signs had been granted for the limited period defined by the Act. . . . The list of improvements in the hands of the Improvements Committee, either completed or in progress, included the four bridges at the Isle of Dogs; Evelyn-street to Creek-road, Deptford; St. George's-place, Knightsbridge; Fulham Palace-road and Queen-street, Hammersmith; Fortress-road, Kentish Town; and Sandy's-row, Bishopsgate, a northern approach to the Tower Bridge. With regard to the southern approach to the Tower Bridge, the Council would remember that in that matter the insistence upon the application of the betterment principle had delayed the improvement. In the opinion of the Council it was especially a case in which betterment should be made to apply. The Council was quite consistent in its action in refusing to execute the improvement until the principle was admitted by Parliament. As regarded the much-abused fountain at Piccadilly-circus, known as the Shaftesbury Memorial Fountain, it was still subject to the experiments of the Improvements Committee. He hoped that in the ultimate recommendation the committee would justify its delay. Three improvements were mentioned in the report as suggested by the committee, but not agreed to by the Council, and as they stood at an estimated net cost of 2,400,000*l.* they had not far to seek for a reason for the Council's disagreement. If the rates were to go up by leaps and bounds, and the ratepayer was willing to stand it, then improvements could be conducted upon the old lines to any extent the Council might determine. But were the ratepayers willing to pay all the the cost of practically limitless improvements? He thought not. . . . The Main Drainage Committee had during the past year executed an amount of work which was most gratifying. That Committee was presided over by Mr. McDougall, whose devotion to the Council's work and whose energy in its execution were well known. In the Council's sludge vessels last year there were sent to sea 2,102,000 tons of sludge, necessitating 2,102 trips, and the Council, without opposition, had decided to build an additional vessel, thus making six in all. The deodorising operations were during the past year carried on at fifteen different stations, and no less than 214 tons of chemicals were used in the process. At Barking and Crossness outfalls minute attention had been paid to everything which was likely to conduce to the efficient and scientific working of those stations, and the erection of Worthington engines at the new engine-house at Abbey-mills had increased the pumping power at that station by about eighteen million gallons daily, thus relieving the low-lying districts of Hackney-wick and the Isle of Dogs from flooding. So satisfactory had been the result of the working of those stations that the costly scheme of sewer reconstruction spoken of some time since could no doubt with safety be very largely modified. The sewers which in 1889 were regarded as totally inadequate for the wants of the district had not only been put in a condition making them able to efficiently discharge their present duties, but to leave a very considerable margin for future years. The condition of the waters of the Thames at the sewage outfalls had not only been kept up to the satisfactory standard attained last year, but the reports were more favourable still. The offensive black mud-banks had disappeared, and given place to clean shores consisting of gravel, clay, or river mud. Not a single complaint was received during last summer from the local riverside authorities. Further, different kinds of fish had been found in various parts of the river where none had been seen for several years. Upon sewer air a series of experiments had been made, proving scientifically that the micro-organisms of sewer air were almost invariably fewer in number than the micro-organisms of fresh air; but in spite of science, and the startling conclusions to which that investigation had led, he infinitely preferred fresh air to sewer air. . . . The report of the Water Commission was of the most unsatisfactory and conflicting character, and the more one knew of the subject the more difficult did it appear to agree with the findings of the Commission upon many important branches of the question. The appropriation of more water from the Thames, instead of affording a permanent settlement of the London water question, only postponed the grappling with it a few years, when every difficulty with which the question was now surrounded must be enormously increased. The Parliamentary Committee was now proceeding to draft Bills, in conference with the Water Committee, dealing with the acquisition of the undertakings of the present water companies, upon fair and reasonable terms, as a step to the equipment of the Council for the discharge of the responsible duty of being the water authority in London. The Works Committee, presided over with great ability by Mr. Robert Lyon, had made a substantial commencement in discharging the onerous duties committed to them. Some 55,000*l.* worth of work had been executed, and about 180,000*l.* worth was being proceeded with. The slopping and watering of the Embankment and bridges had been executed by that Committee, also hoarding and shoring, together with extensive jobbing works. He did not suggest that slopping work was done better when the carts and vans started to perform it in a clean condition, but it certainly was not attractive to see the Council's vehicles covered with mud from end to end, affording unfavourable comparison with the smart turn-out of some local bodies whose names he would not immortalise by mentioning. He hoped the Works Committee would take the hint. With regard to the quality of the work done there were few persons who complained of it. With regard to the cost of such work some people thought that there was more to be said. But were they, as a public body, unwilling to put anything to the credit of quality? His preference would be for good work—not, of course, with total disregard to cost, but with a due appreciation of the fact that cheapness and excellence were seldom compatible. The one danger, and probably the only danger which the Works Committee had to fear—apart from captious criticism which it could safely refute—was that the workman might not be disposed to do as good work for the Council as for a contractor. If that were so it was little short of suicide on the part of the workman. He had yet to learn that the British workman would allow the grandest chance that Labour had ever had in London to slip through his fingers. He believed that the Works Committee would not only justify its existence, but would prove to other municipalities awaiting their experiment that under proper management that thing could be done, and done to the satisfaction of all parties. The period was approaching when the healthy glow of public opinion would make itself felt in the approval or condemnation of the Council's policy. The verdict was with the ratepayers, but for his colleagues he should always claim that they had been loyal to the particular pledges given by them at their election; and in the thousand and one matters in which they had exercised their independent judgment he further claimed for them that they had done so with singleness of purpose and distinguished ability.

Dr. Collins moved that the address be printed and circulated.

Mr. H. P. Harris seconded the motion, which was carried.

Blackwall Tunnel, Southern Approach.—The fourth paragragh of the Bridges Committee was as follows, the recommendation being agreed to:—

"As the Works department will soon complete the paving works in Blackwall-Lane, we would suggest that the department should be entrusted with the paving works in Trafalgar-road, East Greenwich, and in the remaining portion of Blackwall-lane. We submit the plans, specifications, and bills of quantities for these works, which are estimated to cost 10,800*l.* We ecommend—

'That, subject to an estimate being submitted to the Council by the Finance Committee as required by the statute, the works in connexion with the paving of Trafalgar-road, East Greenwich, and a portion of Blackwall-lane be constructed by the Council without the intervention of a contractor, at an estimated cost of 10,800*l.*, and that the plans, specification, and estimate be referred to the Works Committee for that purpose.'"

Art Scholarships and Exhibitions.—The report of the Technical Education Board contained the following paragraph:—

"For the Evening Art Exhibitions 157 candidates sent in their names. For the Artisan Art Scholarships 41 candidates, and for the Schools of Art Scholarships 46 candidates. The examination for the Evening Exhibitions was held simultaneously at the Goldsmiths' Institute, the Clapham School of Art, the Regent-street Polytechnic, and the Camden School of Art, all of which were kindly lent to the Board for the purpose. The examination for Artisan Art Scholarships occupied three evenings, and was conducted at the Regent-street Polytechnic. The examination for Schools of Art Scholarships occupied two evenings, and was also conducted at the Regent-street Polytechnic. The papers were set and the work examined by Mr. Edward R. Taylor, Head Master of the Birmingham Municipal School of Art. The Board has under consideration the results of these examinations and the examiner's report."

After transacting other business, the Council adjourned at seven o'clock.

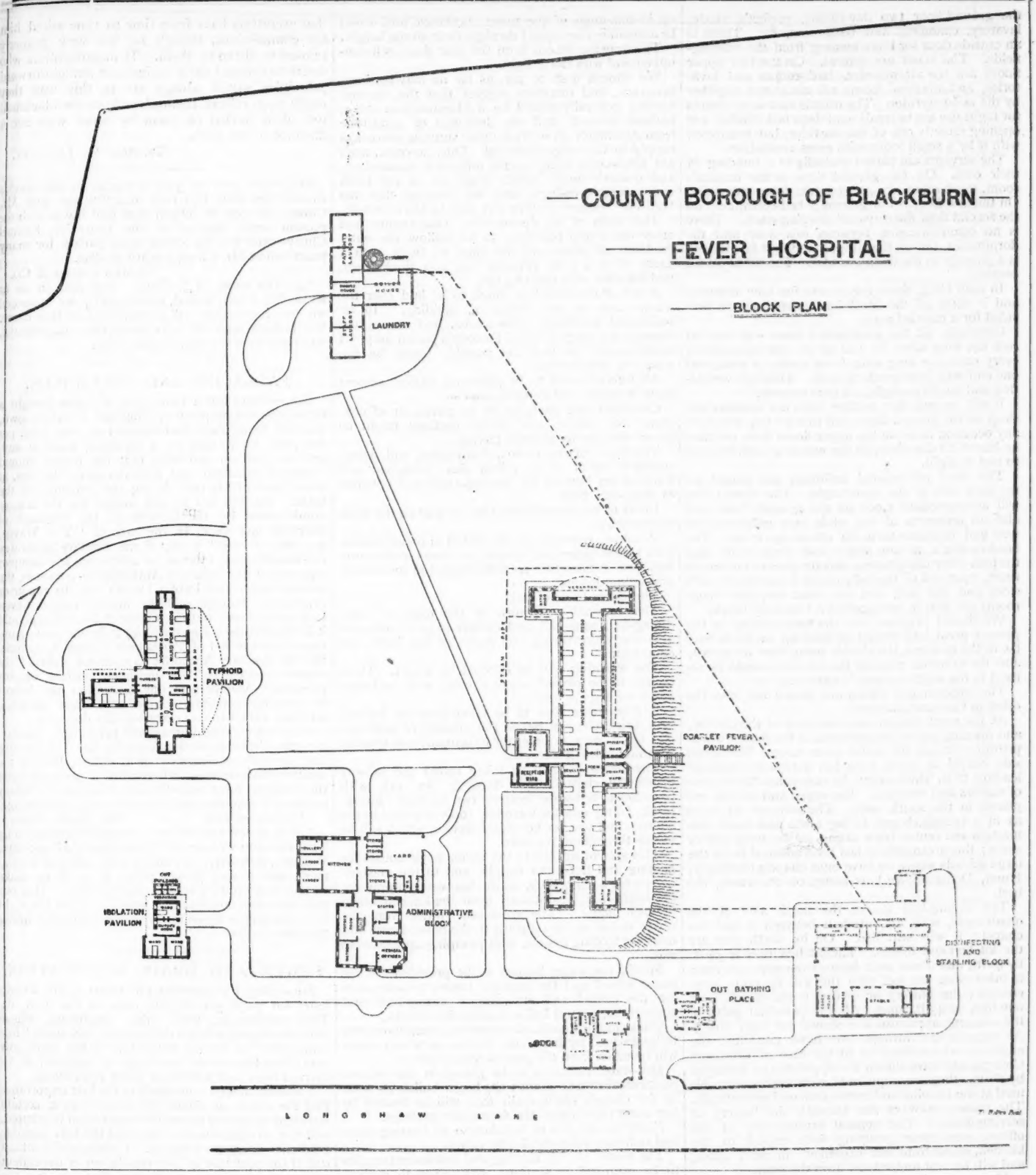
COMPETITIONS.

COUNTY ASYLUM, WINWICK.—A special meeting of the Lancashire Asylums Board was held on the 19th inst. in the County Hall, Preston, to consider the report of the Winwick Asylum Committee upon the plans and estimates for the new county asylum at Winwick. Mr. Howell, Architect to the Commissioners in Lunacy, recommended three out of twenty-two competitive plans sent in for consideration, and placed them, as we have already stated, in the following order:—First, Messrs. Giles, Gough, & Trollope; second, Mr. G. T. Hine; third, Messrs. Henry Crisp & Oatley. Of these the committee recommended the board to accept Messrs. Crisp & Oatley's plan as being the most suitable. The chairman said there was a discrepancy of 76,000*l.* between the lowest and highest original estimate, and one of 13,000*l.* between the lowest and highest amended estimates. The committee believed that by alterations that discrepancy could be reduced, or they would not have been so unanimous in their decisions. Mr. J. Houlding, Liverpool, proposed, "That the report of the Winwick Asylums Plans Committee be received and adopted, and that a committee be appointed with power to confer with the architects on the plans, and submit the same to the Commissioners in Lunacy for their approval." Mr. M'Clure, Liverpool, seconded, and the resolution was carried.

ARCHITECTURAL SOCIETIES.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The Devon and Exeter Architectural Society visited Plymouth on the 21st inst., for a conference relating to professional education in the counties of Devon and Cornwall, and the extension of the society's work in those two counties. The party was met at Millbay station by Mr. J. Hine, with other local architects, and proceeded to the Athenæum, where the chair was taken by the President, Mr. J. Jerman, who stated that the object of the meeting was to hold a friendly conference with their professional brethren of the district on the subject of architectural education, and the extension of the society's area of work over the two counties of Devon and Cornwall as laid down by the Royal Institute of British Architects. A discussion followed, during which many suggestions were offered, and the Council of the Society was requested to take this and other matters into consideration for bringing before a meeting of architects of the province.—In opening the discussion, Mr. Thorne (Barnstaple) speaking of architectural education, dwelt upon the necessity of the provision of a circulating library for the benefit of students, so that similar advantages might be given as were provided for London and other districts, and he suggested that a fund should be raised for that purpose. The suggestion was cordially approved by several speakers. The following resolutions were eventually passed:—"That the Council of the Society consider the desirability of providing for lectures of an educational character." "That steps be taken to harmonise the name of the society with the district included by the Royal Institute of British Architects, viz., Devon and Cornwall." After luncheon the following places of interest were visited: Armada Monument, the old Eddystone, and seventeenth-century Citadel Gateways, St. Andrew's Church, the Guildhall and Municipal Buildings, the Corn Exchange and Markets, St. Matthias Church, Co-operative Company's Buildings, St. Peter's Church, and St. George's Hall.—At the conclusion, on the proposition of Mr. Appleton (Torquay), a vote of thanks was unanimously accorded to Mr. Hine (Plymouth) for the assistance he had rendered in promoting the success of the day's proceedings.

THE NORTHERN ARCHITECTURAL ASSOCIATION.—The annual excursion of this body was held on Saturday, 21st inst., at Thirsk, Rievaulx, and neighbourhood. Twenty-seven members of the Association met at Thirsk, being from Newcastle, Gateshead, Morpeth, North and South Shields, Sunderland, Durham, Darlington, Mid-



dlesbrough, and Leeds. The party travelled by special saloon carriage from Newcastle. Conveyances were in waiting at Thirsk station, and the members were driven to Coxwold (passing Shandy Hall), where the church was inspected. They then proceeded to Byland and Rievaulx Abbeys, where a very pleasant afternoon was spent. The members afterwards returned to Thirsk, and dined at the Fleece Hotel.

BLACKBURN FEVER HOSPITAL.

WE give here the block plan of this hospital, which was opened by the Mayor of Blackburn on Wednesday last. The hospital is planned by and built under the superintendence of Mr. McCallum, the borough engineer of Blackburn. Some further particulars will be found under the head of "General Building News."

In regard to the absence of a scale on the plan, it was sent with the mere statement "thirty feet to one inch," without any drawn-out scale; a system we have often deprecated. In reduction this of course would become incorrect. As it stands on our page it is about 90 ft. to an inch.

Illustrations.

COMPETITION DESIGN FOR CHRIST'S HOSPITAL SCHOOLS.

AS before, we devote one number to the illustration of one of the designs in this competition, that sent in by Mr. Ingelow under the old denomination of the firm, "Carpenter & Ingelow." As in the case of the premiated design, we give an extra-size plate to the general plan, which is in many respects a remarkable one. We add a plate of elevations and sections of the principal buildings, and the two perspective views of portions of the exterior. As in the case of the two other designs previously illustrated, these perspective drawings have been kept, in accordance with the instructions, to the condition of simple practical illustrations, without any attempt at effect. The architect's intentions in the design may be best described by the following quotations from his report:—

"We have arranged the various buildings of the senior school in quadrangular form, the 'Boy's Houses' being on the west and south sides; and museum, library, great hall with its class-rooms, the the chapel on the east; the dining halls, kitchen and offices, court-room, drawing school and gate-house on the north.

The music house has been placed inside the quadrangle, to the south.

The main cloister connects the whole of these buildings together, so that there is a complete covered communication from each one of them to all the others. At the same time the 'houses' do not open directly into the cloister, but are joined to it by short covered ways, so that the boys of one 'house' would not have to enter or make use of the passages or any part of any other 'houses.'

But the cloister and covered ways being only one story high, there is no through communication except on the ground floor, so that each 'house' is separate, and could be entirely isolated from the others if need were.

That this breaking up of a large number of inmates into groups is considered by sanitary authorities of the highest importance will be obvious from the fact that at the Central London Schools at Hanwell, which were in the form of a long enormous block, cuts have been made, and portions of the building pulled down, so as to break up the whole into separate pieces.

The cloister and covered ways do not hinder the free circulation of air; they are only one story high, and the windows of the latter are not glazed.

The houses have been arranged in blocks of two. Taking one of these; each of the two houses has on

the ground-floor two day-rooms, prefect's study, lavatory, changing, and bath-room, &c. There is an outside door for boys coming from the playing-fields. The stairs are central. On the two upper floors are the dormitories, bath-rooms and lavatories, and masters' rooms, all connected together by the main corridor. The urinals and water-closets for night use are in small semi-detached blocks, not opening directly out of the corridor, but connected with it by a small lobby with cross ventilation.

The servants are placed centrally in a building of their own. On the ground floor is the matron's room, work-room, &c., and back door and stairs. On the first floor is the matron's bed-room, and on the second floor the servants' sleeping-room. There is no communication between this floor and the dormitories, but on the ground and first floors there is a passage to the main corridor. The lift is placed centrally.

In each block there are rooms for four masters, and in three of the blocks accommodation is provided for a married man.

Generally, all the dormitories have windows on *both* the long sides, as well as at one end, and in every case one long side, faces south or west, and one end wall faces south or west. Through ventilation and ample sunlight are thus secured.

It will be seen that neither boys nor masters will sleep on the ground floor, and that no boy will have any occasion to be on the upper floors from the time he leaves his dormitory in the morning until he goes to bed at night.

The chief educational buildings are placed on the east side of the quadrangle. The central hall will accommodate 1,000 on the ground floor and also an orchestra of 100, while in a gallery at the west end there are seats for about 150 more. The head-master's private room and class-room, and thirteen other class-rooms, and the prefect's common room, open out of the hall, which is lighted at both sides and one end, and the other required class-rooms are near it, arranged in a two-story block.

We should propose that the wainscotting in the present great hall should be used up, as far as may be, in the new one, the shields being fixed as shown, and the armorial glass in the windows would be re-fixed in the windows and in ante-hall.

The museum and library are placed one over the other in the same building.

At the north end of the east walk of the cloister, and opening out of the ante-hall, is the chapel, which provides sittings for rather over 1,000. The small side chapel or north aisle has a separate passage leading to it, which might be convenient for the use of visitors and servants. The organ and vestries are placed in the south aisle. The seats are arranged as in a college chapel, facing north and south, the masters and senior boys sitting in the back row or stalls; this arrangement has been adopted in all the large schools where we have built chapels (Ardingly, Hurst, Denstone, &c.), as being, on the whole, the best.

The dining-hall is on the north side of the quadrangle, with an ante-hall between it and the chapel; it will seat 840. On its north side are the kitchen and offices. The kitchen itself is 54 ft. by 40 ft., and about 40 ft. high—from our experience in other cases we feel sure this will be quite large enough; the buttery or serving-room, which is in one line, is 45 ft. long. All the principal parts of the cooking apparatus are shown on plan No. 3. As regards the fittings, we have consulted the engineers who advised us in the case of Ellesmere College, and have shown the apparatus as arranged by them—they are acquainted with the dietary table used at the hospital and have calculated accordingly. The dinner railways run through the buttery or serving-lobby. The general arrangement of the offices, and their grouping with regard to the kitchen, result from our experience in other cases, and will be best understood from the plan.

The matron's and servants' dining-rooms are within easy reach of the kitchen, and the sleeping accommodation for the kitchen staff is above them.

The new court-room has been made of the same dimensions as the present room, so that the panelling and other ornamentation may be reused. There are other features of interest in the present hospital (doorways, statues, &c.) which would be refixed in suitable positions.

The place chosen for the head-master's house is, we think, the most convenient and the best. It is near the gate-house or main carriage entrance, and easily accessible from the houses and schools, and at the same time well placed for visitors coming from the new station.

The six houses are shown on the general block plan No. 1, drawn to the scale of the large ordnance map.

These are placed so as to be as near the great kitchen as may be, and there is also an access to them from the basement (see drawing No. 7).

The clock tower is in the centre of the east walk of the cloister; its lowest story forms the chief entrance to the central hall, and on speech days carriages would drive through the gate-house to the foot of it; the next story, or first floor, is used as an ante-room to the gallery of the hall. Above this is the clock-room—then the belfry, and, highest of all, a large cistern, higher above the ground than any of the roofs, so that the water would fill the cisterns in the houses by gravitation; the main pipes would go up in one angle of the tower, as shown, and would be accessible (for repair) through their whole height.

The drawing school is on the first floor, self-contained and with north light. . . .

We should wish to use, as far as may be, local materials, and therefore suggest that the external walling generally should be of Stammerham stone, hammer-dressed, and the dressings of sandstone from Aldridge's pit or from other suitable sources of supply in the neighbourhood This, however, need not necessarily apply to the infirmary, sanatorium, and doctor's house, which might be of red brick with stone dressings, and we propose that the 'officers'' houses shall in any case be thus treated.

The walls of all dormitories, class-rooms and other residential buildings to be hollow, the outer thickness of stone and the inner of brick, with a cavity of 3 or 4 in. between the two thicknesses, tied together with bonding ties.

A bed of concrete 6 in. thick to be laid over the whole area of each block of building. In all residential buildings, class-rooms, and houses, the floors and ceilings to be of Fawcett's patent fireproof construction, so that the possible injury by fire would be very limited.

All internal walls to be plastered, with a cement dado in sitting and living-rooms.

Corridors and passages to be paved, or of concrete; the cloister and similar portions might be paved with the local stone paving.

The floors of day-rooms, dormitories, and living-rooms to be of 1½ in. yellow deal, ploughed and tongued on battens let into top surface of concrete of fire-proof floor.

Roofs to be covered with tiles or lead as the pitch may require.

Windows generally to be glazed in metal frames, with patent casements opening as doors in the lower half, and in the upper portions hinged at the bottom and falling inward.

The doors to be of oak,

The internal woodwork of the roofs of hall, dining-hall, ante-hall, and cloister to be of oak, and also the wainscotting and floors of the halls and court-room.

The warming will be effected by steam. Three boilers to be placed where shown, with sufficient space for a spare one.

A 7-in. steam pipe to be taken from the boilers, in a brick channel below the ground, of sufficient size for a man to enter for examination or repairs, with manholes at intervals.

The steam pipe to be taken round the subway below the cloisters (see drawing No. 11), with branches to hot-water heaters, two to each 'house' block, being one for warming (only required in the winter), and one for hot-water service, which will be in use throughout the year.

This system applies to the seven boys' houses for heating and hot-water supply, and to the masters' houses for *heating only*, as the hot-water supply for the latter will be obtained from the kitchen range in each house. The condensed water from the waste steam to be returned to the boiler-house and used for feeding boilers, with pumping apparatus to suit.

Special hot-water heaters to be provided for the junior school and the masters' houses to same, also for the chapel and ante-chapel, dining-hall and court-room, central hall and adjoining blocks.

The swimming bath, science school, and gymnasium to be warmed by hot-water heaters, to which steam will be taken from the general steam boilers.

Hot-water radiators to be placed in the various positions shown on plans; the larger buildings, such as the chapel, dining-hall, &c., will be heated by hot-water pipes below the floors with gratings.

Fresh air supplies to be taken to all heating pipes and radiators with regulating valves.

The whole of the heating and hot-water supplies to be arranged in sections, with valves to each to close off or work any section separately as may be required."

Correspondence.

To the Editor of THE BUILDER.

COMMISSIONS TO ARCHITECTS.

SIR,—Since my last letter on this subject I have seen Mr. Ching, who assures me that the discount quoted in his circular was not intended to convey any offer of a commission to architects for introducing his wares to their employers. He assures me that he has never allowed any commissions to architects, and should never think of doing so.

I, of course, accept and believe his assurance, and do so with pleasure, and can only regret that his circular should have been so incautiously worded as to bear the meaning I put upon it. I have recommended him to word it differently in future. Probably, most architects would have understood it as I did, it being well known that many architects *do* take illicit commissions, a practice which cannot be too soon exposed and rendered impossible. Mr. Ching himself admits that architects have from time to time asked him for commissions, though he has very properly refused to listen to them. If manufacturers who desire to conduct their business on straightforward principles would always act in this way they might soon relieve themselves from the blackmail too often levied on them by those who are a disgrace to our craft.

THOMAS G. JACKSON.

SIR,—We note in your remarks in last week's *Builder* you state that your interview was with Mr. Ching; we beg to inform you that it was with the present senior partner of the firm—Mr. Samuel Chitty—who was the acting junior partner for many years before Mr. Ching's death in 1890.

COMYN CHING & Co.

*** The name of "Ching" was sent in to us when Mr. Chitty called, consequently we supposed we were conversing with a gentleman of that name. Mr. Jackson seems to have made the same mistake, no doubt from the same cause.—ED.

FALLACIES AND FREEHOLDS.

SIR,—There was a time when, if a man bought a bit of freehold property in England, it was his own, and if it, being rated and assessed at, say, 100*l.* per year, was let by him on a repairing lease at, say, 90*l.* per year, on condition that the tenant should "uphold, maintain, and keep in repair," he was, at least, sure of his 90*l.* during the currency of the lease. But it is not so any longer, for the law, as administered by the Justices of the Borough of Margate last week, in the case of "The Mayor, &c., &c., *v.* Sear," is that if the sanitary apparatus is damaged, say, by frost or otherwise, the occupier may move the Sanitary Authority to summon the owner, under the Public Health Act, to repair or replace the damage, and the justices may not even look at the lease, but must convict the owner should it be his fortune (or misfortune) to be the party summoned, as the Act of Parliament makes it optional for the Sanitary Authority to summon either "the owner or occupier" for nuisance existing on any premises. Members of our profession and lessors of property generally should have their attention seriously called to this extraordinary decision.

I am not complaining against my judges, nor saying one rebellious word against the law, but the idea that a repairing lease, as it is called, throws the sanitary maintenance and repair of a property upon the occupier, must henceforth be considered a fallacy to which freeholders may receive a rude awakening.

Westgate-on-Sea. W. LANE SEAR.

*** It is not our rule to comment editorially on a legal decision without full knowledge of all the fact. We may, however, point out that the policy of Parliament, and a very proper policy it is, is to make certain that sanitary repairs shall be done. Has our correspondent consulted his solicitor as to his right over against the lessee in respect of the matter under the lease?—ED.

SEWER AND DRAIN VENTILATION.

SIR,—May I be permitted to revert to Mr. Read's letter on page 501 of your issue of the 30th ult. That gentleman, with other engineers, whose numbers appear to be on the increase, advocates "free ventilation" of sewers, but I fail to see from any part of his letter what advantage is supposed to be derived from that method of sewer ventilation.

I observe that he considers it of the first importance that the sewer air should be reduced to a certain standard of quality before free ventilation is granted, and that to obtain such a standard the best possible gradients must be adopted. I respectfully submit that if the principle of free ventilation is dependent on good gradients, it is one that, to say the least, cannot have a general application, for engineers well know that the "best possible" are too often very bad gradients. Will Mr. Read kindly point out what we gain by "free ventilation"? We discharge into our sewers what is obnoxious in order to get rid of it as quickly and as completely as possible. To retain it would be offensive to sight and smell, and injurious to health, and if we dare do so, we should hermetically seal our sewage conduits so as absolutely to prevent any emanation whatever from escaping to pollute the atmosphere in which we live. Why do we not hermetically seal our sewers? Every one knows that the conditions under which sewers operate would at times force the contained air through the water-seals which separate our dwellings from the sewer, unless some other escape were provided. Apart from the necessity of the special provision of fresh air in cases where sewers have to be entered for cleaning, &c., I venture to think that is the sole reason for providing such other escapes for the air, but in making that provision an unexpected evil was created, and one which has proved far less easily cured.

Difference of temperature within and without the sewer, and other causes, often drive the sewer air (directed to particular exits, according to the direction and force of the wind) at a much greater velocity through the openings than was bargained for. The ventilators themselves thereby become a nuisance and source of danger. The next effort of

engineers was directed to cure this evil. That effort has continued almost without intermission for the past forty years, and the discussion on the subject at the Association of Municipal Engineers is a witness with what little success, not to speak of the letters of complaints which are constantly appearing in newspapers from persons who are unfortunate enough to reside near them.

I will not attempt to enumerate the legion of remedies which have been tried, but the one which strikes me as the most curious of all is that which assumes that the more offensive the ventilators the more you should increase their number, and the less it will harm you. If a ventilator smells very badly, put in another. If that is objectionable, add a third, and so on, supposing that if there be three, each one will only be one-third as offensive as if there were one only, forgetting that two of them may serve as inlets for the wind to concentrate a more violent current than ever upon the third.

What would appear to be the common-sense remedy is, that since the sewers are constructed for the purpose of receiving and conveying away the filth which is offensive and injurious to health, we should allow no more of its contents to pass therefrom than is necessary to secure perfect safety to the seals which are provided for separating the house from the sewer. This can be done perfectly by a simple layer of cotton-wool. The law under which air will pass through such a filter differs from that through a clear opening. In the latter case the velocity varies as the square root of the pressure, while in the former case it varies directly as the pressure. The effect of this difference is, that with minute pressure such as is usual in sewers under normal conditions, say the $\frac{1}{200}$ of an inch of water, the flow through the filter is very slow; but with a sudden rise, for instance, in the volume of sewage requiring rapid exit of the contained air, the velocity increases enormously more rapidly in proportion to the pressure than is the case with a clear opening. Take, for example, two openings, one clear and the other provided with a cotton-wool filter, such that they would transmit an equal volume of air in equal time with $\frac{1}{200}$-in. pressure, then in order for each to discharge air with twenty times the original velocity, the pressure would only have to be increased twenty times for the filter, that is, to $\frac{1}{10}$ of an inch, but with the clear opening it would have to be increased 400 times, that is to 2 in., which would be sufficient to force many of the water-seals. Besides, however, operating as a check upon the useless and injurious wind currents in the sewer, the cotton-wool acts as a perfect germ-arrester, thus purifying from its most dangerous element the comparatively small quantity of sewer air which it is necessary to discharge into the atmosphere. I believe the importance of this filtration of air cannot be over-estimated. Many cases have come within my experience where disease has undoubtedly been contracted by emanations from sewer ventilators, and no stronger evidence need be required than that afforded by the Medical Officer of Health of Fulham, reported in the *Surveyor* of the 28th ult. He says that of 231 cases of diphtheria no less than 96 occurred in houses situated within 10 yds. of a sewer-ventilator, although curiously enough, the only remedy Dr. Jackson sees is to increase the number of houses which shall be within ten yards of the ventilator, by placing them in actual contact with the house, and, what is worse, having their outlets elevated so as to be in greater proximity to the sleeping apartments, where, perhaps more than in any other part of the house, infection is likely to be communicated.

The objection to the use of cotton-wool as a sewer air filter lay in its liability to become clogged from the condensation of moisture from the warm sewer air, especially during the winter time; but that difficulty has been entirely overcome by an arrangement which utilises the very heat which caused the trouble, to prevent it. The filtering material is thereby preserved dry under any extremes of temperature.

THOMAS CAINK,
Guildhall, Worcester, City Engineer.
July 11, 1894.

P.S.—Since writing this letter my attention has been drawn to a report by Dr. F. W. Clark, Medical Officer of Health of Lowestoft, which corroborates the views expressed by Dr. Jackson upon the relation of diphtheria to sewer ventilator gratings. Dr. Clark recommends a less dangerous method of sewer ventilation, and maintains that the less the movement of the air of sewers the less will the disease germs be carried into the outer air, and contends that one of the greatest faults of the modern system of ventilation is the creation of draughts throughout the length of our sewers. In this view I entirely concur, and the report embodies precisely the considerations which have induced me to adopt the system of ventilation through cotton-wool filters, referred to in the foregoing letter.

T. C.

SIR,—I am afraid we are as distant as ever from an agreement on this point. Many of our pet theories have had to be abandoned. Soil-pipes are being reduced to 3½ in., house-drains to 4 in., the old valve closet is again coming into fashion.

We were told that sewer-air always travelled in the opposite direction to the flow of the liquid; we are now told that it travels with the flow. One professor tells us that the ventilation-pipes should equal the superficial area of the cross section of the sewer, another, that an inch pipe is sufficient.

Bristol, with sewers unventilated and very little water used for flushing, is a healthier town than Leeds, where ventilation and flushing is extensively adopted. Surely this points to the necessity of exhaustive experiments being necessary, not with tow and clay, as we are told was done at the Sanitary Institute flushing cistern experiments, but in existing sewers, and by a Government Department. The remedy seems to be in some means of powerful extraction from the sewers at their outfall, and the pulling down of all the extraction-shafts. As theory seems unsettled, let us fall back on practice. I have stood under a slate roof and smelt the sewer-air discharged from ventilators of pipes blown through the joints of slates.

I have a disconnecting trap (Doulton's No. 31), I have carefully watched for eight years, and it has never required clearing. I have gauged it many times, and never found the deposit your correspondent mentions. I have had fifty of these traps in use at one building for many years, and never had any trouble with them; occasionally one may choke, but they are easily cleared by unskilled men. At one building there was no disconnecting trap. A scullery in the basement had a sink, with waste-pipe connected with the drain *trapped*. This was not used for some time, the water-seal evaporated, the sewer-gas entered the house, typhoid broke out, and one man died. A disconnecting trap would have prevented this. Under these circumstances I shall still use a disconnecting trap.

ROBERT PHILLIPS,
County Surveyor, Gloucester.

SIR,—In vol. xv., part ii., of the *Journal* of the Sanitary Institute just issued, there is a paper (page 264) by Colonel G. E. Waring, M.Inst.C.E., in which he states that the city of New Orleans, containing a population of 300,000, is about to be sewered on what is known as "Waring's system." "All rain-water being rigidly excluded, and all sewers to be automatically flushed and ventilated through the soil-pipes of the houses,* no trap being allowed on the main drain."

Colonel Waring was the engineer who carried out the sewerage of Memphis, U.S., about fifteen years ago. I think the passage above quoted will answer the question Mr. Read asked of me in his letter to the *Builder* of June 30.

But what will Mr. Buchan say?

RICHARD F. GRANTHAM,
M.Inst.C.E.

SIR,—Mr. Read on page 26 states that the recommendation of medical men that the house should be isolated from "sewer and drain gas," was "very good advice." "But," he says, "the method of carrying this isolation into effect by means of the interceptor trap is bad."

Now, will he give us some better method? He has not yet done so. He relies on the water-trap of the closet as a sure safeguard against *both* sewer and drain gas, and then finds fault with sanitary engineers and doctors for recommending the same water-trap as a safeguard against the sewer itself! Mr. Read is not at all logical.

Mr. Read stigmatises the interceptor-trap on the drain as a legalised "rat-trap obstruction." He deserves a vote of thanks from the rats for thus supporting their right of way into the interior of the house. In houses where the closet traps are of lead the rats can easily eat a hole through the lead from the inside of the pipe, and did so one night in a house I was staying in. Then in a house shut up for a time, in which the soil-pipes are iron, and the traps of the closets earthenware, the rats could follow the air or sewer gas into the house when the water of the closet-traps had evaporated below the water-seal.

In the third paragraph of his letter on page 26, Mr. Read puts his foot into his own basket and breaks all his own eggs, when he says that the greater amount of air-space and the less liquid sewage in the sewer between midnight and 6 a.m. does *not* imply that more sewer-gas is generated then. The truth is that much more sewer-gas *is* generated there from the befouled sides of the sewer exposed between midnight and 6 a.m., which are not exposed in the daytime. Further, when he tells us that from midnight till 6 a.m. the drain-air is being poisoned by the emanations from the three gallons of stagnant sewage in the interceptor-trap, we are entitled to ask, "What poisonous emanations?" Dr. Carmichael kept "poisonous" or germ-breeding matter in his traps *for weeks*, but no emanations could get out of said traps to harm the materials exposed only a few inches beyond the traps.

Glasgow, July 14, 1894. W. P. BUCHAN.

SIR,—The careful and elaborate experiments which have been made during the past few years by several eminent authorities give conclusive evidence that sewers can only be ventilated by frequent openings, certainly not more than 100 yds. apart, and closer where possible. There appears to be no doubt about this, as attempts to force or exhaust air through long lengths of sewers distinctly failed. The difficulty is to provide these openings, and yet ensure that no nuisance or danger shall arise from them. Some such arrangement as that shown in the sketch by Mr. Baker, published in the *Builder* for July 14 is probably in the right direction but, whatever means are adopted, the ventilation of the sewer must be distinct from that of house-drains. Personally, I do not see the necessity or desirability for such ventilation at each house in streets where the property is small and the houses close together, but would adopt, as I am doing in works now being designed by me, air-shafts at intervals and at dead ends of sewers of sufficient size to ventilate the sewer they are connected with.

With regard to Mr. Baker's sketch I would point out that the junction of air inlet with sewer would frequently be covered by sewage and the inlet ventilator stopped.

The shafts I have referred to could be built against house walls without causing any disfigurement or unduly asserting their object—which has been done at Wimbledon and other places. I should prefer them built in brick or in some fairly non-conducting material so that an equable temperature would be maintained and a constant up-draught secured.

Inlets would be provided at points between the outlets, and would enter the sewer at the crown, so as to be always uncovered. The inlet shafts should be the same size as the outlets, and would be taken to the side of the road, so as not to be stopped up by mud, &c. It must be borne in mind that the direction of these inlet air drains is upwards, and consequently there is a tendency for sewer air to rise in them, but if the outlets are properly placed and built in non-conducting material, I do not think there would be much likelihood of the air inlets becoming sewer gas outlets.

Mr. Read, as a practical engineer, cannot expect to make much impression on practical men with his arguments against the interceptor.

The real question is, Is it desirable to intercept house-drains from public sewers? Most unbiassed authorities will answer this in the affirmative, and that being admitted, then the obstruction to the sewage flow offered by an interceptor—which, with one designed on scientific lines, is practically inappreciable—is of no weight compared to the advantage it affords. And the emanations from the "three gallons of stagnant sewage" contained therein would not, I take it, prove so dangerous as air from the sewer, although as Mr. Read states "between 12, midnight, and 6 a.m. . . . . the sewage consists chiefly of water wasting through rubbishy fittings." If that is so, would not the aforesaid water have had to flush out the "stagnant sewage" from the interceptor before it could reach the sewer?

HARRY GEO. ASSITER.

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* This is not very clear. We presume the soil-pipes of the houses have nothing to do with the automatic flushing, but the sentence certainly reads as if they had.—ED.

LLANDUDNO MUNICIPAL BUILDINGS COMPETITION.

SIR,—In answer to "A Competitor's" letter in your to-day's issue on the above subject I beg to give the information asked for. One-hundred-and-eighty-one forms of particulars were sent out, and thirty-three sets of designs were received.

A Committee Meeting was called, and met on June 22 and discussed the names of three gentlemen as assessors, but came to no conclusion.

A further Committee was called on July 6, and the name of one of these gentlemen was selected for recommendation to the Board. The Board met on July 18, and I regret to say have referred the matter back for further consideration.

The three names placed before the Committee were given to me at my request by the President of the Royal Institute of British Architects, but as the Llandudno Improvement Commissioners have not yet decided upon the assessor, and, further, are somewhat divided as to the fee they are of opinion they ought to give, I am not at liberty to mention their names.

May I add that personally it has been and is my desire to see that the competition is conducted strictly fairly throughout, and that an assessor should be appointed who would be acceptable to all.

Commissioners' Offices, E. P. STEPHENSON,
Llandudno. A.M.Inst.C.E.
July 21, 1894.

COLOURED SCULPTURE.

SIR,—I observe that in the *Builder* for the 14th inst., you notice the article on "Coloured Sculpture," by Mr. George Frampton, in the June *Studio.*

Since a suggestion you particularise in it is a doubtful one, I cannot let an artist be saddled with it, who very decidedly has the totality of gifts which make a sculptor.

I beg you therefore for the sake of the distinguished Associate to note that this suggestion, with all its questionableness, is not his, but that of—Yours faithfully,

MATTHEW WEBB.

*** We did not observe that there were two authorships under the same heading; and of course we did not take it that Mr. Frampton was referred to as one who had not "the totality of gifts."—ED.

The Student's Column.

DETAILS OF RURAL WATER SUPPLY.—IV.

LAND VALUATION, RIPARIAN RIGHTS, EASEMENTS, AND COMPENSATION—*continued.*

Riparian Rights and Compensation.

THE proprietor of any land adjoining or abutting on a stream has certain privileges or rights known as "riparian" (Lat. *ripa*=a bank).

The law relating to these rights has been, from time to time, set forth in many well-known cases, to some of which further reference will be made.

In accordance with English law, the property in water flowing in a river or stream in its natural course belongs to no one, but the use of it to everyone having a right of access to it.

In Miner *v.* Gilmour, Lord Kingsdown observed as follows:—"By the general law applicable to running streams, every riparian proprietor has a right to what may be called the ordinary use of the water flowing past his land—for instance, the reasonable use of the water for his domestic purposes, and for his cattle, and this without regard to the effect which such use may have in case of deficiency upon proprietors lower down the stream. But, further, he has a right to the use of it for any purpose, or what may be deemed the extraordinary use of it, provided that he does not thereby interfere with the rights of other proprietors, either above or below him. Subject to this condition, he may dam up for the purpose of a mill, or divert the water for the purpose of irrigation; but he has no right to interrupt the regular flow of the stream, if he thereby interferes with the lawful use of the water by other proprietors, and inflicts upon them a sensible injury."

In the case of Chasemore *v.* Richards, it was held that "The right to the enjoyment of a natural stream of water on the surface belongs *naturali jure* to the proprietor of the adjoining land as a natural incidence to the right to the soil itself. He has the right to have it come to him in its natural state, in flow, quantity, and quality, and to go from him without obstruction, upon the same principle that he is entitled to the support of his neighbour's soil for his own in its natural state. And such a right depends in no way upon prescription, or the presumed grant of his neighbour, nor from the presumed acquiescence of the proprietors above and below."

Again, in Mason *v.* Hill, "A riparian proprietor can have no larger right than he has by nature against those above and below him. Hence the right to have a stream to flow in its natural state without diminution or alteration is an incident to the property in the land through which it passes; but flowing water is *publici iuris*, not in the sense that it is a *bonum vacans*, to which the first occupant may acquire an exclusive right, but that it is public and common in this sense only, that all may reasonably use it who have a right of access to it; that none can have any property in the water itself, except in the particular portion which he may choose to abstract from the stream and take into his possession, and that during the time of his possession only."

If, then, a Local Sanitary Authority, or generally the promoters of a water supply scheme, desire to utilise any spring or stream of water for that purpose, they must first come to terms with the owner of the land whereon the spring rises, or the riparian owner of that part of the stream from which they wish to take their supply. As such owner can only grant the limited powers which he himself possesses, terms must then be arranged with all the riparian owners lower down the stream who have appropriated, or may appropriate, the water to a beneficial use. Such arrangements must be made in writing.

"If any works are proposed to be done affecting any water or water rights the proper course to be observed by a Local Authority is to serve a notice under the 328th section of the Public Health Act, 1875, on all persons interested, specifying the particulars of the matters and things intended to be done. Then will follow, either the consent of the parties interested, or there will be a reference to arbitration, and then will follow, either compensation for injury, if the injury can be compensated in money, or an abandonment of the proposed works." There is recourse to the promotion of a private Bill in Parliament, but this is too expensive, except in the case of very large schemes.

Water rights require to be very carefully dealt with, and every detail should be settled before the works are commenced.

In the first instance the quantity of water should be gauged, by methods to be described in a later paper, the fall of the stream ascertained, and a careful investigation made of the use to which the water is put below the point of the proposed intake. The quantity of water required by any mills or other machinery worked by the stream should be obtained, as well as the quantity used for domestic, dairy, and other purposes.

The head waters of a stream are usually required for the purposes of waterworks when storage is necessary. It therefore becomes a matter for serious consideration whether such abstraction, either wholly or partially, will deprive the riparian owners below the site of the proposed works of sufficient water for the purposes of fishing, irrigation, mills, factories, boundary fences, and other matters. The compensation in such cases is either given in kind or in money. The quantity in the former case varies from one-third to one-tenth of the available annual yield of the gathering ground, necessitating in numerous cases the construction of "compensation reservoirs." The object of these reservoirs is to store the flood-water, so as to maintain a continuous or intermittent flow, as may be arranged or settled by Provisional Order or Act of Parliament. When the proprietors are disposed to treat and are not numerous, it is better in most cases to purchase their rights and be relieved of a large proportion of the compensation water.

There is no property in underground water, and any proprietor may sink or dig wells and obtain water, even if by doing so the water in a neighbouring proprietor's well is abstracted or diverted into another channel. In some cases wells are sunk to the spring supplying a stream, which by intercepting the spring at a lower point may considerably reduce the flow of water in the stream.

"But although a landowner will not in general be restrained from drawing off the subterranean waters in the adjoining land, yet he will be restrained, if, in so doing, he drains off the water flowing *in a defined surface channel* through the adjoining land." As an instance of the application of this principle, the following case is given. A large provincial water company recently promoted a Bill to enable them to sink wells at various points along a stream, and pump the water which percolated into them to a storage reservoir. The riparian owners and residents in the valley opposed the Bill with such success that the quantity of water to be allowed to flow in the stream before pumping could proceed was so great as to render the Act when passed useless to the water company.

Much of the above information has been extracted from the valuable legal works of Messrs. Michael & Will, and Messrs. W. C. & A. Glen, to whom thanks are due.

Easements and Compensation.

In laying the various mains and branches in connexion with a system of water supply it frequently becomes necessary to lay pipes or tunnel through private property. In cases where the purchase of the freehold of the land is not made obligatory, or desirable, an easement is obtained.

The term "easement" is defined in an ancient work called the "Terms de la Ley" as follows:—"An easement is a privilege that one neighbour hath of another by writing or prescription, without profit, as a way or sink through his land or such like."

An easement giving the right to lay pipes, build culverts, drive tunnels, &c., for the purpose of conveying water, implies a right of entry at all times for repairs or other purposes rendered necessary for its proper enjoyment. And, further, the person to whom the easement is granted may prevent the owner of the land from doing anything to interfere with such a right—as, for instance, building houses or planting trees over the line of easement, or otherwise placing any obstruction to the full and proper enjoyment by the purchaser thereof.

In the case of Pomfret *v.* Ricroft, Twysden, J., observed as follows:—"If a man gives me a licence to lay pipes of lead in his land to convey water to my cistern, I may afterwards enter and dig the land to mend the pipes, though the soil belongs to another and not to me." "Whoever grants a thing is supposed also tacitly to grant that without which the grant itself would be of no effect."

In the case of "Goodheart *v.* Hyett," the owner of the land commenced building over the line of easement, and the owner of the easement sought to restrain him from doing so, on the ground that if the house was built it would be impossible, or not reasonably practicable, for the owner of the easement to have access to the pipe for repairs. The Court restrained the owner of the land from building over the line of easement.

In taking into consideration the compensation due to the owner of the land, the elements of claim for damage may be classified as follows:—

1.—The privilege of carrying a certain thing, either continuously or intermittently, over or under the land to the profit of the purchaser.

2.—The right of entry to pipe or culvert at any time.

3.—The right of preventing any buildings or other obstructions being erected or built on the line of easement.

4.—The interference with the profitable laying out of the land for building sites or otherwise.

5.—The driving of the tunnel or excavation of the trench may have the effect of withdrawing the moisture from the crops, and thus depreciate the value of the land for agricultural purposes. On the other hand it may be of great benefit where the land is marshy or water-logged.

6.—The driving of the tunnel or excavation of the trench may intercept or divert underground water which previously had risen on other portions of the land.

The methods adopted by experts, and the results arrived at, differ so materially as to render it impossible to give any common data upon which the valuation is based. This is chiefly due to the variety of opinions held as to what constitute the elements of damage, even on adjoining land when precisely the same conditions prevail.

The following are, however, a few of the methods adopted by experienced valuers:—

1.—The length of the easement in yards is multiplied successively by 33 ft., the value per acre, and thirty years' purchase.

2.—The length of the easement in yards is multiplied successively by 4 yds., the value per acre, and from forty to fifty years' purchase, and the result divided equally between the two parties to the easement.

3.—The length of the easement in yards is multiplied by 8 yds., and then by half the value of the fee simple.

To the results arrived at by any of the above methods a fixed price must be added for ventilating shafts, air-valve standards, or other surface arrangements, varying from 5s. to 6*l.* each.

The widths taken for the easement for the purposes of valuation are somewhat elastic, varying from 6 ft. to 66 ft. For pipes or culverts up to 2 ft. diameter the width is frequently taken at 12 ft.; for larger culverts the width taken generally varies from 12 ft. to 33 ft.

The average price is taken by some valuers at 3*l.* per chain lineal, irrespective of width. Other valuers taken from 3d. to 2s. per lineal yard for agricultural land, and from 5s. to 6*l.* per lineal yard for building land, as the average price throughout the length of the easement.

A Local Authority has full powers as to laying pipes, &c., along the highways under its control within its own district. With regard to highways outside its district, should any persons having the care of such highways object in writing, pipes must not be laid without the consent of the Local Government Board. The easement is usually granted conditionally upon the undertakers re-instating the road and keeping it in repair for one year after the completion of the work to the satisfaction of the Authority granting the easement. In some cases the Authority agree to accept a fixed sum per mile, relieving the undertakers from any further liability.

GENERAL BUILDING NEWS.

RESTORATION OF CHURCH, COLD ASHTON.—The church of the Holy Trinity, Cold Ashton, Gloucestershire, was reopened after partial renovation, on the 19th inst. The church, excepting the tower and part of the north wall of nave and chancel, seems to have been rebuilt by Thomas Keys, a former Rector, 1510 to 1530 A.D., and to have undergone but little subsequent alteration. The works, so far as at present completed, comprise entire renovation of the chancel-roof, repairs to nave and aisle-roof, and new lead throughout; complete drainage of the subsoil; new step paving; boarded floors to seats; heating apparatus; repairs to east end masonry; reopening of the west arch into the tower. Pennant stone has been largely used inside; Cornish marble and Keramic mosaic for the chancel and sacrarium. Some of the new English oak seats are fixed. These were made by Mr. R. Morris, Ditchingham. Messrs. Hayward & Wooster, of Bath, were the general contractors; Mr. W. Orchard, Cold Ashton, having previously executed the chancel-roof. The brass lectern altar rails and lamps were supplied by Messrs. Wippell & Co. An interesting feature in the church is a carved

oak fronted pulpit, the pulpit itself lying within the north wall. It has a lofty stone canopy, with crockets and pinnacles. Latimer is said to have preached from this pulpit. It was restored many years since by the late Rector of the parish. The new oak seats are of massive design, the ends square framed with moulded cappings, and recessed panels with tracery fillings. The font has been moved to a position near the south door, and a west gallery (erected some time early in the present century) cleared away. An organ has been presented by Miss Ward, a lady who has otherwise assisted the work. It is a divided bracket organ, the bellows being in the upper part of the vestry, the organ-blower standing in a gallery erected for the purpose. It forms a decorative feature in the chancel, and illustrates the usefulness of this method of dealing with organs in small parish churches. The expense of an "organ chamber" is saved, and an architectural decoration gained at the same time. Mr. Augustus Frere, of London, is the architect responsible for the work.

STABLES FOR THE QUEEN REGENT OF SPAIN.—Extensive stables have recently been built for the Queen of Spain, at the summer palace of Miramar, San Sebastian. They are divided into two main wings, one for horses, the other for the large mules used in the royal carriages; there are about fifty stalls and boxes in all, and a central building with accommodation for about eighty men (coachmen, grooms, helpers, &c.) The stable divisions are of wrought-iron, with open panels, except at the upper ends near the mangers, where they are solid. Draw-out bars are furnished to divide off the animals entirely at night, in case of any breaking loose. The walls are tiled above the level of the mangers, with tiles of a willow-green shade (selected for coolness of aspect), and a copious supply of air is given by a ventilator above each horse's head. Vitiated air is carried off by a large outlet ventilator in the roof, and for very hot weather an extra provision is made by an inlet for fresh air below each manger. Special racks, nearly solid, had to be made for the class of fodder used in the country (chopped barley, straw, &c.) The harness and saddle-rooms are in a central position, between the horses' and mules' stables. The hayloft are placed above the stables, so as to minimise the effect of external changes of temperature. The work has been carried out under an English architect, Mr. Wornum, and the stable fittings are by an English firm, Messrs. Musgrave, who have introduced all their improvements in stable drainage, fittings, ventilators, &c.

MISSION HALL AND SCHOOL, EDGEHILL, LIVERPOOL.—The laying of the memorial stone of the new church mission-room and school in Uxbridge-street, in connexion with St. Catherine's Church, Edgehill, took place on the 19th inst. The entire cost of erecting the building will be 4,000*l.* The school being for girls and infants, cookery and other class-rooms will be provided. The mission-hall above will be 51 ft. long by 41 ft. wide, and will be approached by two stone staircases at either end of the front of the building. A second room will be provided on the same floor as the mission-hall for committee meetings, mothers' meetings, &c. The building is to be constructed of local brick, with J. C. Edwards's Ruabon facings, while there will be a glazed brick dado round the school-room and class-rooms. The architects are Messrs. Arthur Baker and Harold Hughes, of London and Bangor, and on their behalf Mr. W. L. Tiffin will supervise the carrying out of the work of construction. The builders are Messrs. Brown & Backhouse.

PROPOSED RECONSTRUCTION OF THE EDINBURGH CITY CHAMBERS.—It is proposed to reconstruct the Edinburgh City Chambers, and the Dean of Guild Miller, in conjunction with Mr. Morham, City Architect, has had prepared a series of elevations and plans, showing in a tentative way their views as to what might be done with the present buildings were an extension and reconstruction of them resolved upon. An elevation has been made of the back of the lofty tenement, showing how it might be made more decorative, so as to give it a better appearance when seen from Princes-street. To this end it is proposed to build out a wing on its higher side to the line of Cockburn-street, and also about the point of the present stair leading from Cockburn-street to the Royal Exchange, a large square tower carried a story above the roof and finished with a mansard roof. The decorative treatment applied to the proposed new wing and the tower is similar in style to that on the front of the building facing the Exchange. It is proposed to annex the large tenement on the west side of the Exchange formerly occupied by the Writers to the Signet and the Heriot offices. Should it be all acquired, it would be pulled down, and on its site would be reconstructed a new Council Chamber, extending from the Exchange to Warriston-close, and with an outlook also to the north. Below it would be a new Burgh Court-room. The new Council-room is shown about two-and-a-half times the size of the present chamber, with a gallery for the public and a reporters' gallery. The old Council Chambers would be converted into a Lord Provost's room, and other parts of the building would be remodelled. The whole scheme is estimated to cost about 50,000*l.*

PRESBYTERIAN CHURCH, WALTON BRECK, NEAR LIVERPOOL.—The foundation-stone of the new English Presbyterian Church in Walton Breck-road was laid on the 18th inst. by Mr. William Evans, J.P. The erection of the new church has been placed in the hands of Messrs. Hough & Pilling, of Everton, who will work from the designs and under the superintendence of Messrs. Richard Owens & Sons, architects, Liverpool.

NEW CHANCEL, LEXDEN CHURCH, ESSEX.—On the 19th inst. the new chancel of Lexden Church was consecrated by the Bishop of the Diocese. The main portion of the chancel now completed consists of choir, sanctuary, north aisle, and ambulatory, beyond which still remains to be added a south aisle. Over the ambulatory is an organ-loft and ministrels' gallery. The structural work has been carried out by Messrs. N. Saunders & Son, of Dedham, from designs furnished by Mr. J. C. Traylen, of Stamford. Mr. G. Spearman, of Lexden, has superintended the building as clerk of the works. The style is Early Perpendicular; it is built of the local flint-work, with box-stone dressings, and bands intermixed. In the east end the window is enriched with stone carving, both internally and externally. The window, which consists of ten lights divided by a transom, is filled with stained glass from the works of Messrs. Heaton, Butler, & Bayne, and illustrates the Crucifixion and other scenes of the Passion. The pavement of the choir and sanctuary is laid in marble, the steps are of Derbyshire polished marble, enriched with Devonshire red, Irish green, and Italian white. This is the work of Messrs. Martinenghi & Gilbardie, of Milan, who have introduced some of their new mosiac. The interior of the east wall above the floor is formed of Bath stone and Alabaster, in alternate bands. The Holy Table and retable are of dark English oak, carved. In the recess of the east window, and above the retable is a hanging, designed and executed by Mr. William Morris.

FEVER HOSPITAL, BLACKBURN.—On Wednesday the Mayor of Blackburn opened the new Fever Hospital at Longshaw, Blackburn. The site occupies an area of 10½ acres, and the grounds are enclosed by a boundary wall, 6 ft. 6 in. high. On entering the gates of the institution, there is a porter's lodge. The out bathing-place stands opposite the lodge, and to the right of the entrance-gates. There are two waiting-rooms, also bath, lavatory, &c. It is intended that it shall be used principally as the final disinfecting and discharging place for patients. The Administrative Block is situated to the left of the main entrance, is three stories high, and contains accommodation for the medical officer, matron, and nurses, with sixteen bedrooms, baths, lavatories, and water-closets. Hydrants are placed on the landings of all floors of this block. A detached portion of the Administrative Block, one story high, contains kitchen, scullery, dairy, pantry, larder, &c. The pavilions, two in number, consist of long, one-storied buildings, divided into two main wards by the nurses' room and scullery. The angles between floors, walls, and ceilings have been rounded off. All the floors are formed of oak blocks, laid on 4 in. of concrete and 2 in. of cement. The Scarlet Fever Pavilion lies to the right of the Administrative Block, and contains the following wards:—men's ward, 60 ft. long by 24 ft. wide, and affords accommodation for ten beds. The women and children's ward is 84 ft. long by 24 ft. wide, and accommodates fourteen beds. There is a private ward to each of these containing one bed. The two main wards are separated by the nurses' room. Crossing the corridor, and immediately opposite the nurses' room, is the scullery and larder. There is also an isolated reception ward and small ventilating engine-house at the entrance to this pavilion. Lavatories, bath-rooms, with movable baths and sprays, &c., are provided in both the men's and women's wards. A verandah has been erected on the west side. The Typhoid Fever Pavilion lies to the rear of the Administrative Block on the left hand, and provides accommodation for four beds in the men's ward, and six beds in the women's and children's ward. The two wards are separated partly by a corridor, and partly by the nurses' room. Full control over both wards can be obtained by means of windows placed in the nurses' room. A private ward, containing two beds, lies to the rear of the nurses' room. Lavatories, baths, scullery, linen and food stores have been erected in suitable positions. The wards are heated by Manchester grates, placed in the centre of the floors. A verandah runs the length of the entire building on the west side. The Isolation Block is situated immediately to the left of the Administrative Block, and contains three single wards, with nurses' room and out-building containing bath, sink, &c. The ventilation of the Scarlet Fever Pavilion has been carried out by the Sturtevant Company, and combines heating with ventilation. Air is supplied to the building and withdrawn by means of two fans, worked by a four horse-power engine. The air is heated before admission by means of steam pipes, around which it circulates. The air is also filtered, and can, when necessary, be moistened, and to a certain extent cooled. This air is admitted at a height of 10 ft., and the outlets are placed close to the floors under the beds. The extracted air is conducted by earthenware pipes to the laundry chimney. The ventilating pipes are of glazed earthenware, and are so arranged that they can be cleansed. The ventilation of the other parts of the hospital is carried on by fireplaces, ventilating stoves, ventilating gas-lights, and Boyle's patent ventilators. The Laundry lies to the extreme south of the site, and contains patients' laundry, engine-house, staff laundry, boiler-house, and chimney 90 ft. high. The patients' laundry in entirely cut off from the staff laundry. The Disinfectory, Stabling, and Mortuary Block faces Longshaw-lane, to the west of the site. The disinfector occupies a building 24 ft. long by 12 ft. wide, and has two entrances. The grounds of the hospital are drained by means of surface or tile drains. The sewage from the hospital is discharged from the various buildings into earthenware pipes, and with an inclination of 1 ft. in 60 ft., falls to the extreme north-west side of the site. There it joins the main sewer. Manholes are placed at intervals of 200 ft. These are built of salt-glazed bricks, with blue brick inverts, and are accessible by means of a cast-iron manhole cover, on hinges. A perforated grate is also placed on every manhole for ventilation. All drains, before entering any building, are disconnected by means of Buchan's Disconnecting Traps, built into manholes. The soil-pipes from the various closets are ventilated by means of cast-iron pipes carried up the walls to about 3 ft. above the eaves of the roofs. Water-closets, sinks, and hoppers have been supplied by Messrs. Doulton & Co., of Lambeth, and Messrs. Twyford & Co., of Hanley. All outside walls are formed of bricks, with Yorkshire stone dressings. All walls, ceilings, coves, &c., have been plastered and finished with patent adamant plaster, supplied by the Patent Adamant Company, Limited, of Birmingham. The plans for the hospital were prepared and carried out by the staff of the Borough Engineer (Mr. J. B. McCallum, M. Inst. C.E.), with the medical assistance in the first instance of Dr. S. Barwise, and secondly, by Dr. J. Wheatley, M.O.H., of the County Borough of Blackburn. The chief contractors were—for masonry and brickwork, J. Whittaker; for joinery, Kenyon & Moulding; for plumbing, E. Cunliffe; for painting, John Hargreaves; for plastering, A. Airey; for flagging and slating, R. & T. Seed (all of Blackburn). The total cost, including land and furniture, was about 21,000*l.*

ASSEMBLY ROOMS, AMBLESIDE.—The new Assembly Rooms at Ambleside have been opened. The work comprises a large assembly room, 80 ft. by 38 ft., with entrances and staircases at each end, and retiring-rooms, lavatories, &c. Over these there is a committee-room, and rooms for the caretaker, with a separate staircase. In the basement there is a large drill-hall, with a kitchen, pantry, store-rooms, &c., under the retiring-rooms. There is an outside entrance to the drill-hall, and a staircase leading to the assembly-room, so that direct access is provided when suppers, &c., are required. The building has been carried out with local stone and Green stone dressings, and has been built by the contractor, Mr. Arthur Jackson, of Ambleside; the steel roof for the large room is by Mr. Dawnay; heating by Mr. Spencer (Oldham); ventilators by Messrs. Kershaw (Lancaster). The architect was Mr. Robert Walker, of Windermere.

NEW PREMISES, LEADENHALL-STREET.—The "West India House," Leadenhall-street, was formally opened last Monday by Alderman and Sheriff Sir Joseph Dimsdale, who attended in state. The contractors were Messrs. John Allen & Sons, of Kilburn, and the amount of the contract was about 24,000*l.* The building, which consists of mercantile and shipping offices, occupies the site of Nos. 96, 97, and 98, Leadenhall-street, and covers an area of about 7,000 ft. The building contains over 100 rooms, and comprises seven stories, served by a Waygood lift. The elevation is carried out in Portland stone and grey granite. Mr. Delissa Joseph is the architect.

SANITARY AND ENGINEERING NEWS.

ELECTRIC LIGHTING AT EALING.—The buildings of the Local Board's Central Electric Lighting Station at Ealing, which are being erected to the design and under the superintendence of Messrs. Bramwell & Harris, of Westminster, are approaching completion. The contractors for the buildings are Messrs. Wilkinson, Brothers; the machinery and boiler contracts are held by Messrs. Siemens Brothers and by Messrs. James Watt & Co., respectively; while the mains are being laid by The Callender Bitumen Company. All branches of the work are now so far advanced that the supply current will be commenced early in September. During the month of October the Local Board propose to hold an Electrical Exhibition in the Victoria Hall or other suitable place, so that customers may have an opportunity of seeing the uses to which electricity could be put, for lighting or for other purposes.

DRAINAGE OF NAPLES.—A recent report of the British Consul at Naples upon the trade of that district contains some interesting information as to the progress of the sanitary measures resolved upon for that city by Parliament after the visitation of cholera in 1884, and towards the cost of which a subvention of 4,000,000*l.* was granted. The general outline of the drainage scheme is: The city has been divided in three zones—high, middle and low, the latter running along the sea shore. The sewage and pluvial waters of the high zone will flow off by the natural decline; the sewage of the middle and low zones will meet at a certain point, and is

to be raised by pumping machinery into a sewer common to the three zones. The main drainage thus comprises a collector and an outlet discharging into the Bay of Cumæ on the combined system; a collector for the middle zone, opening into an outlet discharging in the Bay of Nisida on the separate system, the sewer ending at Piedigrotta, where the sewage will be raised by pumps into the sewer discharging at Cumæ, while the rain-water will go to Nisida; two collectors for the low zone, the sewage being pumped up into the high zone collector, and the pluvial water flowing to the sea; two collectors for the water from the hills, carrying earth and sand—these will be discharged at the limits of the city; five safety outlets in cases of torrents caused by extraordinary rainfall. To assure the action of the sewers, a high-pressure conduit from the springs of Serino, capable of conveying 130,000 cubic yards of water per day, has been added to two long-existing conduits; the surplus will be used for watering the streets. The above works are in an advanced state, and will be finished within a year, after which time the street drainage will be commenced, and subsequently led into the collectors of the different zones. As each zone is independent of the others, the work can be proceeded with at various points simultaneously. Respecting the utilisation of the sewage of Naples, it was considered, that as the city was built on the sea-shore, it would not be convenient to use the sewage for agricultural purposes, and the plan was therefore adopted to let the sewage run along the shore of Cumæ, which is deserted for about 12½ miles; in addition, the irrigation system adopted in other countries was not considered safe to be employed in this hot climate. The question of using the sewage for agricultural purposes has been left to private enterprise. The cost of the drainage system is estimated at £920,000, and will be defrayed by the State, but a portion will be refunded by the Municipality of Naples through the payment of an annual interest. The balance, 3,080,000*l.*, will be used for the demolition of the low quarters of the city.

ST. CUTHBERT'S CHURCH, EDINBURGH.—In the notice of this church in our last issue, in the sentence "far enough below the level of Princes-street to feel uncomfortably dark," the word printed "dark" should have been "sunk." The reference was merely to the architectural position of the church.

THE YEADON WATER SUPPLY, YORKSHIRE.—The Yeadon Waterworks Company have impounded in a reservoir at Hawksworth, between Baildon and Menston, a portion of the water which finds its way from 700 acres of moorland in that neighbourhood into three becks, and eventually into the River Aire. The people to be served numbered about 11,000 at the last census. The water drawn from three becks s carried in culverts to the reservoir, the principal structural feature of which is an earthen embankment half a mile long, 50 ft. high at its loftiest point, 250 ft. wide at the base, and 12 ft. across its summit. A watertight puddle wall is carried down the middle of the bank to a depth of 40 ft. below the original surface of the ground. The area of the new storage basin is a little over 16 acres, and, as it stands 765 ft. above the sea level, the force gathered by the water in its descent herefrom to Guiseley will be quite sufficient to send it up the opposite acclivity to Yeadon and Rawdon. The construction of the reservoir has cost about 23,000*l.* The engineer who planned and has superintended the construction of the works is Mr. A. E. Preston, of Bradford; Mr. John Brigg, of Bingley, has built the reservoir, Mr. H. Wilson, of Great Horton, laying the pipes.

WATERWORKS, NEW QUAY, CORNWALL.—A preliminary trial has just been made of the new pumping plant erected for giving a supplementary supply of water to New Quay. The directors of the Water Company obtained possession of the disused mine-shaft at Mount Wise, which tapped a large spring of water. Mr. J. Thomas, M.Inst.C.E., of Mevagissy, advised that pumps should be fixed in the well capable of delivering 6,000 gallons per hour into the service reservoir on the top of the hill. An order was subsequently placed with the firm of engineers Stothert & Pitt, Limited, of Bath, to construct the necessary machinery. Pumps of the two-throw bucket type, 7 in. diameter by 18 in. stroke, are fixed in the well 64 ft. below the water level, and with their suction and delivery-pipes are suspended from steel girders built into the walls of the shaft a few feet above the water, and these also carry the valve-box, air-vessel, and rising main to the reservoir, into which the water is delivered at a height of 163 ft. above the pumps. The pumps are worked by helical spur-gearing to deaden noise, and are driven by a steam-engine of six nominal horse-power, the steam being supplied by a steel Cornish boiler.

FOREIGN AND COLONIAL.

FRANCE.—The Government has submitted to the Chamber of Deputies a scheme for the construction, near the fortifications of Paris (between the Clichy and Asnières gates), of large isolated buildings to receive respectively the decorations and scenic properties of the Opéra, the Opéra Comique, and the Odéon. The cost of these buildings, plans of which have been prepared by M. Bernier, architect, is estimated at 1,291,000 francs. The amount is proposed to be raised by the sale of property in Rue Richer, where the Opéra stores stood which were burned down last winter.——M. Chaplain is at work on a medal of the new President of the Republic.——The Municipal Council of Paris has voted the construction of a new lunatic asylum at Ville Evrard, which will be the subject of a public competition. They have also approved the plans for a sanatorium for consumptive patients at Angicourt (Oise), at an estimated expense of 791,000 francs.——A monument has been erected at Chalons-sur-Marne to soldiers and sailors of the Department who have been killed in battle; and a monument has been erected at Charny, near Verdun, to a victim of the Franco-German war, named Viollard, who was shot by the Germans in October, 1870.——A congress of owners of building property in France will be held at Lyons from the 6th to the 9th of August.——A new hospital is to be constructed at Marseilles, and another is shortly to be built at St. Etienne.——The Chamber of Deputies has addressed to the Minister of Public Works a petition in favour of the immediate execution of the long-desired canal from the Atlantic to the Mediterranean.——M. Fagel, the sculptor, is to execute for the town of Maubeuge a bust of the late President, which will be placed in the court of the Mairie on a pedestal designed by M. Neuilles (architect).——The Town Council of Limoges has voted the erection of a statue to the late President, to be erected in a public place in the town.——We regret to have to record the death, at the age of sixty-eight, of M. Edmond Guillaume, architect to the Louvre and the Tuileries, and a Professor at the École des Beaux-Arts. We shall give a special notice of this eminent architect in the next "Letter from Paris."——The death is also announced of M. Edouard André, a wealthy amateur, well known for his enlightened taste in art. He had made a splendid collection of works of art in his mansion in the Boulevard Haussmann. He married some years ago Mdlle. Nelly Jacquemard, who has acquired a considerable reputation as a portrait-painter.——The two ceilings by M. Puvis de Chavannes and M. Bonnat, which we published last month, are now in process of being fixed at the Hôtel de Ville.——The Municipal Council have commissioned M. Goustiaux to represent them at the Congress of the Public Health Institute to be held in London this week.

GERMANY.—The Municipality of Berlin has appointed a committee to consider the proposals with regard to the proposed Metropolitan Overhead Electrical Railways. This means more delay, which is much to be deplored in view of the short time left for their construction before the 1896 Exhibition.——The building of the tramway over the Opernplatz has been commenced.——Work on the alterations to the Royal Opera House is now in full progress; 7,500*l.* is to be spent on the heating arrangements, and 2,500*l.* on alterations to the stairways.——The telephone lines from Berlin to Munich, and from Berlin to Vienna (the latter is 660 kilomètres long), are to be completed before the end of the year. The lines will also serve Dresden, Leipsic, Nuremberg, and Prague.——The sarcophagi of the Emperor William I. and his consort, by Professor Encke, have arrived from Carrara, and will be shortly placed in the mausoleum at Charlottenburg.——Professor Conrad Hase, since 1849 Professor of Architecture at the Hanover Technical College, has announced his intention of retiring in October.——The Saxon Ministry of the Interior is about to nominate a commission for the preservation of monumental works of art in the kingdom of Saxony.——Professor Dörpfeld's report as to the excavations undertaken at Hissarlik during last year has recently been published under the title "Troja, 1893." The excavators were successful in their chief endeavour—viz., the establishment of the existence of a city of the Mycenæan epoch in the so-called sixth layer.——The latest number of the *Limes* journal contains Herr Conrady's description of a castellum at Altstadt, near Miltenberg, discovered during the works on the railway from the latter place to Aschaffenburg, and Herr Kohl's report of his investigations of the "Limes Rhæticus" at Monschrot. Here the original frontier mark was met with about 4 ft. below the surface, in the form of the remains of a continuous wooden paling. The distance from the "Limes" wall varies from 2 to 17 yds.; the course taken by this paling is more straggling than that of the "Limes" wall, which was undoubtedly constructed at a later date.——Work has been commenced on the foundations of the National Monument to the Emperor William I. at Berlin. The foundations being below the level of the Spree are likely to take a considerable time, as special works will be necessary to fence it against the river. The colonnade encircling the monument will be built in accordance with new plans by Herr Halmhuber, in which much of the ornamentation shown in the original model has been discarded. On the Spree side there is to be a slight curve towards the river which, it is claimed, will enhance the general effect. The monument will be unveiled on March 22, 1897.——A competition is announced for the proposed statue of Prince Bismarck in front of the Königsplatz façade of the new Imperial Houses of Parliament. The statue in bronze is to represent the Prince as Imperial Chancellor on foot, in his Cuirassier uniform. The ornamentation of the pediment and the general arrangement of the approaches are left to the artist; a model of the statue, sixty centimètres high, and one of the approaches to the scale of 1 in 25 are required. The competition, in which premiums of the total value of 4,000*l.* will be given, is restricted to German artists, and will close on June 1 next year. The architectural members of the jury, which numbers eighteen, and includes the President and Vice-President of the Reichstag, are Messrs. Ende, Kyllmann, and Wallot.——Two fountains are to be erected on the Gendarmenmarkt at a cost of 1,400*l.*——The new church at Schöneberg, a suburb of Berlin, is to be consecrated on October 1. The edifice will be lighted by electricity.——The Emperor has approved of the re-election of Professor Becker as President of the Royal Academy of Arts.——Professor Jakobsthal has been elected head of the architectural department of the Charlottenburg Technical College.——Professor Hundreiser's group, as well as Nikolaus Geiger's "Barbarossa," for the Kyffhauser Emperor William monument, are nearly completed. Barbarossa is represented seated on his throne just awakening from the long sleep that, according to the myth, has overtaken him.——The organ of Strasburg Cathedral is to be reconstructed according to plans by M. Merklin, of Paris, at a cost of 1,500*l.*——The city of Dortmund has petitioned the Minister of Public Works in favour of the canalization of the Lippe, so as to form a navigable waterway between Dortmund and the Rhine, the proposed prolongation of the Ems canal having been rejected.——The new German hospital at Jerusalem was opened in the beginning of the month.

RUSSIA.—The Government is establishing an archæological institute at Constantinople with a view to aiding the investigation of the antiquities of Greece and Asia Minor by Russians. The annual grant is 12,000 roubles gold, and the control is vested in the Russian Embassy at Constantinople.——The Russian Palestine Mission has presented the bust of King Herod, discovered at Jerusalem during certain archæological investigations, to the Imperial collections at St. Petersburg.

MISCELLANEOUS.

GLASS BRICKS.—We have received a circular describing and illustrating the "Falconnier" glass bricks, made at Penzig, in Silesia. The circular says "The glass-bricks are hollow, hermetically sealed, and contain air. They are sent from the works ready for use. The laying of them is very simple, being accomplished in the same manner as ordinary bricks: viz., with mortar or cement. The daylight enters a wall of glass-bricks freely, but it is *not* transparent. The glass-bricks also impede sound, and being bad conductors of heat, the temperature inside the walls changes very slowly. This makes them a valuable material for building hot-houses, ice-houses, &c. The cost of heating a hot-house built of glass-bricks, for example, is 50 per cent. less than one built of window-glass." This of course one would naturally expect to be the case, but the initial cost of the structure must be considerably greater. We can, however, imagine other uses for the material than for green-houses. It seems worth attention. Messrs. H. Pahl & Co. are the London agents.

SURREY ARCHÆOLOGICAL SOCIETY.—The annual excursion of this society for 1894 was to Farnham, and it took place on the 18th inst. As Farnham was visited in July, 1880, by this society, when a paper was read in the church by Mr. Ralph Nevill, and another in the castle by the Hon. W. St. John Brodrick, M.P., and which papers are published in the eighth volume of the Society's *Transactions*, it was not thought necessary to visit those structures on the present occasion, and the party went first to Bentley Church, where the Rev. O. C. Lang, the Vicar, read a paper descriptive of the building. He said the oldest parts of the present church dated from about 1130 to 1120, this being also the about date of the founding of Waverley Abbey.—It was stated that an older edifice had existed, and when constructing a drain on the north side of the churchyard a concrete foundation was discovered which seemed to point to some earlier building. When the renovation took place on the last occasion, the west wall of the north aisle contained many fragments of Norman capitals and mouldings, upon some of which were scroll patterns; the Norman font was also recovered, but in a much injured state. The stained glass in the east window was English workmanship of about 1450.—Mr. Lang next described the bells, the brasses, and the monuments, also the parish registers, which dated back to 1539. The journey was then continued to Froyle Church, where Mr. Mill Stephenson, F.S.A., the hon. secretary, described the church, which consists of chancel and a large nave, the latter, as well as the tower, being rebuilt in brickwork in 1772. Portions of the chancel had also been destroyed completely. The east window and gable end, however, remained, and dated from about 1360 to 1380. The window was particularly interesting, being filled in with stained glass of that period, and consisted of numerous coats-of-arms. The colouring of the glass was very good, and Mr. Mill Stephenson was of opinion that it had the finest display of heraldry

in the whole of Hampshire. Crondall church was next visited, and here the Vicar, the Rev. M. C. Baynes, read a paper on the church and its monuments; and Mr. C. Forster Hayward, F.S.A., gave an architectural description of the building.

COUNTRY AND LONDON TENDERS.—At the last fortnightly meeting of the Metropolitan Asylums Board, at the County Hall, Spring-gardens, on the recommendation of the General Purposes Committee, the tenders of Mr. C. Wall, Chelsea, for the erection of the scarlet fever and diphtheria pavilions at the Brook Hospital at an aggregate sum of 96,315*l.* were accepted. Considerable discussion arose upon several other recommendations of the committee bearing upon tenders in connexion with the same hospital. Mr. Elliott wanted to know why one firm had been passed over in preference to another whose tender was 22*l.* less. Mr. Scovell said that this was a matter which had been gone into in committee, and had only been decided upon after full discussion. Mr. Robinson thought they were bound to give the contracts to the lowest tenderer unless reasons were given to the contrary. He also considered that the tender of Messrs. J. Shillitoe & Sons, of Bury St. Edmunds, for the erection of other buildings at the Brook Hospital at 67,750*l.* ought not to be accepted. In his opinion London labour ought to be employed, and he proposed as an amendment that the tenders of Mr. Charles Wall be accepted for two sections of the work in place of those of Messrs. Shillitoe. Mr. Brass seconded the amendment, which was carried.

"MOUNTAIN, MOOR, AND LOCH."—The illustrated guide-book (Sir J. Causton & Sons) under this title is apparently, like others of the kind, a publication in the interests of a railway company, to recommend the beauty and interest of the country through which the West Highland Railway passes; but it is really very well done, and is quite an agreeable and readable book, as well as practically useful to people who do not know the ground.

ENGINEERING TRADES' REPORT. — Messrs. Matheson & Grant's half-yearly report says that strikes and labour troubles are among the main causes which at present hinder and postpone the improvement in trade which has been so long expected. Harvest prospects are favourable, and in other respects also there are numerous signs of recovery from the dulness of the last three years, which has restricted almost every kind of engineering enterprise. The heavy trades have specially suffered, for while in many branches activity has never ceased, railway construction, shipbuilding, and other industries which demand large quantities of steel and iron have been unduly depressed. But it is evident that the present accumulation of idle capital cannot for long remain unemployed; and it is likely to be used in countries and for purposes which are more under the control of the British investor than has been the case in previous periods of revival. Railway enterprise in the United States has in the past absorbed a large share of British capital without directly benefitting British engineers or manufacturers. The destruction of confidence in the management of such railways, and the heavy losses incurred by the investors in them, may together tend to divert investments to India and the colonies. In India alone there are ample opportunities for remunerative railways; the traffic is waiting, plant and material can be bought cheaply, and the capital is available if proper facilities and permissions are granted. Even on existing railways expenditure on maintenance has been unduly restricted, and there will be much leeway to make up in the renewals of rolling stock and other plant which will be manufactured here. In South Africa the output of gold is largely and steadily rising, and with such increase will come the need for more railways and more mining machinery. And every new railway will assist in opening out a field for extensions and further development of mines. The prices of pig-iron are rather lower than in January, and were it not for uncertainties in regard to the cost of fuel, strike of colliers in Scotland, and the closing of the blast furnaces, the tendency would probably be still downwards. The prices of finished iron are also very low and seem to be tending downwards, but even a moderate improvement in the general export returns of the country will, if continued, tell quickly in favour of the iron trade also. The steel trade seems to have settled down to a monotony of cheapness. Although the low prices are of course largely due to modern economies of manufacture, it is obvious that the current rates of 3*l.* 12*s.* 6*d.* per ton for rails and 5*l.* for ship-plates cannot leave a compensating profit to the makers. The coal strike in Scotland and the consequent stoppage of the steel works is diverting much of the trade in shipbuilding material to England. Notwithstanding the extreme cheapness of steel and the more than corresponding reduction in the prices of finished work the leading firms are only partially employed, and in seeking profit from the manufacture they have often to undertake troublesome and risky erection *in situ* at home and abroad. According to the amount of repetition, bridges up to 200-ft. span can be purchased at from 10*l.* to 13*l.* per ton, and roof structures at from 12*l.* to 15*l.* per ton. During the last half-year a considerable tonnage has been made for English railways at home; the bridges for the Manchester Ship Canal have been finished, but much further work in warehouses, wharfs, and other subsidiary structures will be needed. The Tower Bridge over the Thames is finished. The Watkin Tower, now being erected near London, which was to outvie the Eiffel structure in Paris, is stopped, at a height of 200 ft., for want of funds. There has been a moderate export of bridges to India, China, and Japan. The principal railways at home are constantly extending and rebuilding their stations, and there is much strengthening and renewing of bridges. Prices for works of this kind will probably advance if the export trade continues to revive. The Portland cement trade, which during the last ten years has increased in quantity and importance, has since 1892 been depressed and unremunerative. The factories in the London district which produce the bulk of English cement and dominate the trade, have now an output capacity of about 25,000 tons weekly, but the sales last year reached the low level of about 15,000 tons, and although there has been a considerable revival since Easter, even now they hardly attain 20,000 tons, and there is no improvement whatever in price. The growing consumption—most of it for export—is however a good sign of returning activity in public works at home and abroad.

THE LONDON SCHOOL BOARD AND PAINTERS.—A correspondent having written to the School Board for London asking if the contractors for painting the schools this summer would be compelled to pay the union rate of wages to their workmen, and also if the unemployed painters residing in the district of each school would have the preference for work, has received a reply from the Clerk of the Board to the effect that the clause in each contract for painting with reference to the rate of wages is as follows:—"Where the London scale of wages shall apply the contractor shall pay to the workmen employed by him the rate of wages mutually agreed upon by the Central Association of Master Builders of London and the London Building Trades' Federation. In all other districts where the London scale of wages shall not apply the contractor shall pay the workmen and all other persons employed by him in connexion with his contract not less than the minimum standard rate of wages which may for the time being be usual and generally paid where such workmen are employed." There is, he stated, no requirement in the contract that contractors shall give the preference to those workmen who live in the locality of each school, and the Board are not proposing to insert a clause to this effect in the contract,

DEDICATION OF HACKNEY MARSHES.—On the 21st inst., Sir John Hutton (Chairman of the London County Council) formally dedicated Hackney Marshes to the public for ever. The Marsh is a large area of flat meadow-land, intersected and skirted by the River Lea and its tributaries. It is 337 acres in extent, and has been secured by the London County Council at a cost of 75,000*l.*, of which 50,050*l.* has been contributed by the Council, 15,000*l.* by the Hackney District Board, 5,000*l.* by Lord Amherst (the Lord of the Manor), and 5,000*l.* by private subscription. There are various interesting historical associations attached to the Marshes, and the old hostelry of the White Hart, which is said to have been built in 1513, and which was the resort of the celebrated highwayman, Dick Turpin, still stands.

THE GUILD AND SCHOOL OF HANDICRAFT.—The anniversary of the Guild and School of Handicraft was celebrated at Essex House, Mile End-road, on the 21st inst. A garden party was held in the grounds adjoining the house, and subsequently the annual meeting was held, under the presidency of Sir A. Rollit, M.P., when Mr. Walter Crane presented the report for the past year.—Sir Albert Rollit, in opening the proceedings, said it ought never to be forgotten that London was a great manufacturing city, and, therefore, it was essential that those in the City should take care of the instruction and training of our workmen. He expressed the hope that the authorities of the school would continue, as heretofore, first to give the scientific basis of all industrial education in knowledge, and then to combine that professional work with practical teaching in the workshop. This was the first institution of the kind which made this combination, and the work might well be fostered by the County Council, for the Guild much needed financial support.—Mr. Walter Crane said the efforts made in our large towns to bring the laggard technical education up to modern requirements were inspired solely by the desire to see England pre-eminent in trade. As an artist, he raised his protest, for he was not prepared to advocate England's triumphant progress as the workshop of the world. The first object of education was to make life livable, and they should not destroy the means of life in getting their living. He thought art and handicraft should ever go hand in hand. The main object was to produce things of beauty, and there should be no production for production's sake. It was curious that in France and Germany, and on the Continen generally, they were beginning to look to England to lead them in matters of industrial design.

LEGAL.

POLLUTION OF LAKE WINDERMERE.

MR. JUSTICE COLLINS gave judgment on the 19th inst., at the Manchester Assizes, in the case of Townson *v.* Bowness Local Board, which was tried at the recent Appleby Assizes. The action was brought by the plaintiff to prevent the defendants from turning sewage into Lake Windermere. His Lordship said that the defence was that the liquid turned into the lake was purified, so that it ceased to be sewage; that even if it was sewage the defendants adopted the best available means of treating it, and that the plaintiff was not the party aggrieved. The last-mentioned point was strongly urged. Mr. Townson was a riparian owner, and his land was about a quarter of a mile distant from the effluent. Further down he had an hotel, and he was one of a limited number of persons who had an exclusive right of fishing in the lake. It was perfectly clear that sewage passed into the lake, and counsel for the defence eventually admitted this. He thought it was clear that the effluent left something to be desired, and he found that a scheme had been prepared for dealing with it, and sanctioned by the Local Government Board, but the Local Board which proposed it was defeated, and a board which supported a policy of inaction elected. His Lordship also held that the plaintiff was a party aggrieved, and directed that the pollution should cease, but allowed six months for the construction of the necessary works.

MEETINGS.

MONDAY, JULY 30.

British Archæological Association.—Annual Congress, Manchester.

TUESDAY, JULY 31.

British Archæological Association.—Annual Congress, Manchester (continued).

WEDNESDAY, AUGUST 1.

British Archæological Association.—Annual Congress, Manchester (continued).

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the members, 8.30 p.m.

THURSDAY, AUGUST 2.

British Archæological Association.—Annual Congress Manchester (continued).

FRIDAY, AUGUST 3.

British Archæological Association.—Annual Congress Manchester (continued).

Liverpool Engineering Society.—Excursion to the Oswestry reservoir and filter-beds, masonry dam and tower at Lake Vyrnwy.

SATURDAY, AUGUST 4.

British Archæological Association.—Annual Congress, Manchester (concluded).

Liverpool Engineering Society.—Excursion (second day).

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

14,766.—HAND-RAILS: *D. Taylor.*—For hand-rails, the length of which may be lengthened or shortened, say, for cottagers who have to provide hand-rails at their own expense, as they remove from one dwelling to another, a hand-rail is formed of a rod of circular section of wood connected by a sliding metal tube. It is fixed in position by a large screw staple, with flat tubular socket, to which the rail is fixed by a screw.

14,777.—OUTLET VENTILATORS: *T. Whitehead.*—For discharging air or gas from buildings to the atmosphere, a ventilator with a turret and louvre top, and a bottom portion, is provided, having inside louvres on the principle of venetian shutters. The louvres are formed in the tube as small truncated cones, and effectually prevent any down-draught.

15,273.—FIREPROOF FLOORS: *H. Hood.*—Slotted bars or hanger and boards form the seating for the cement for the floors, and these are supported by cross-bars resting on or fixed in slots in the girders.

15,534.—SAWS FOR STONE: *J. Smith.*—The frame carrying the saws is regulated to follow an approximately straight line from the highest to the central position where it is on about the same plane as the operating crank. Means for adjusting and securing the saws are also described in the specification.

161.—FIREPLACES: *H. Ames.*—In the stove, cast or wrought iron plates or apertures, so arranged as to form a movable slide or regulator which is fixed in the throat or lower opening of the chimney, and a special slide or regulator, are the main features of this invention.

7,137.—PARQUET PLATES FOR FLOORS: *G. Unden.*—The plates are of asphalte or such like substance, one side covered with a layer or veneer arranged according to certain patterns. Strengthening ribs are made in the plate, and the devices also bind it together.

8,549.—FIREPROOF CEMENT: *R. Stone.*—In addition to the flux used, pearlash, potash, soda, &c., are added in such proportions as may be found advisable.

NEW APPLICATIONS FOR LETTERS PATENT.

JULY 9.—13,233, J. Norton, Fastenings for gates and doors.—13,249, J. Farley, Joints of Earthenware or other Pipes.

JULY 10.—13,292, T. Twyford, Water-closets, 13,318, J. Burke, Wood-working Machines.—13,328, J. Onions, Kilns for Drying and Burning Bricks, Tiles, &c.—13,334, A. Titchew, Combined Casement Stay and Hook.

JULY 11.—13,383, Syphon Cisterns, J. Rogers.—13,387, G. Anderson, Stone Sawing Machines.—13,394, M. Puzey, Windows.—13,395, J. Neech, Ventilating Sewers.—13,401, C. Hitchcock, Apparatus to be inserted in Chimneys, Chimney-pots, &c., for providing an ascending current of air to carry off the smoke from domestic fires, and prevent down draught.—13,404, A. and J. Tutcher, Flushing apparatus for Water Cisterns.—13,418, H. Jones, Combined Sash and Casement Windows.—13,429, A. Moore, Automatic Door-holder.—13,431, C. McCarthy, Preventing the freezing and bursting of Water-pipes.—13,447, A. Ball and J. Hickton, Fasteners for Window-sashes, &c.

JULY 12.—13,461, J. Shanks, Water-closets.—13,471, T. Gore, Wood Pavements, &c.—13,491, C. Barr, Sash Fastener.—13,521, T. Wyatt, Clamping of Floors, Joinery, &c.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Banking Premises	Halifax and Huddersfield Union Banking Company, Limited ..	100*l.* 50*l.*	Sept. 30
*Schools, &c.	Hartlepool Sch. Bd. ..	.....	do.
*Municipal Buildings	Kings Lynn Corp.	21*l.* and 10*l.* 10*s.*	Nov. 1

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Steam Road Roller, &c.	Beckenham Loc. Bd...	J. A Angell	July 30
Workshops, Tranmere	Birkenhead Union....	J. C. Ogle	July 31
Sett Paving (10,470 yards), Birkenhead ..	L. & N.W. & G.W.R. Co.	*Official*	do.
*Road Works, Rosenthal-road	Lewisham Bd. of Wks.	do.	do.
*Road Works, Devonshire-road	do.	do.	do.
*Road Works, Glenwood-road	do.	do.	do.
Private Road Works, St. Peter's-street ..	Halifax Corporation..	E. R. S. Escott	Aug. 1
Business Premises, Treorky, S. Wales....	David Morgan.. ...	J. Rees	do.
Water Storage Tower at Poor Law Schools	Cowley (Oxon.) Union	W. H. Castle	do.
Excavating, Forming, &c. Talbot-road, Carlisle	.....	Lister Asquith.....	do.
Alterations, &c. to Fleet Schools, near Yeovil	Mr. Vining	.....	do.
Five Shops and Houses, Queen's-road, Halifax	.....	Medley Hall.....	Aug. 2
Three Houses, Ferham-street, Masborough, Yorks	.....	J. Axleby	do.
Additions, &c. to British Schools, Newbury	Managers	W. H. Bell	do.
Class-rooms, &c. at Schools, Pease's West	Crook (Durham) Sch. Board	H. T. Gradon	do.
Tar Paving, &c.	Southend School Board	*Official*	do.
*Alteration of Class-room, &c.	Forest Gate Sch. Dist.	G. E. Holman	do.
Schools, Purston, Yorks	.....	W. H. Fearnley	Aug. 3
Church, Llwydcoed, near Aberdare	.....	G. E. Halliday.....	do.
Sewering, &c. Beech-street	Gorton (Lancs.) L. B.	C. J. Lomax.....	do.
Road Materials	Dewsbury Corporation	H. C. Marks.....	Aug. 4
*Embankment and Concrete Wall	Windsor Town Coun.	*Official*	do.
*Alterations to Workhouse	Fulham Union	A. Saxon Snell	do.
Rebuilding Lisbeg House, Eyrecourt, co. Galway	Jno. Gairdner, J.P. ..	J. Smith	Aug. 6
*Main Drainage Works	Kingsthorpe Loc. Bd.	J. Ingman	do.
*Sewerage Works	Romford U. R. S. A...	Brundell, Simmons, & Brundell	do.
Hospital	Grantham Corp.....	J. Evans.....	Aug. 7
*Public Offices and County Courts	Merthyr Tydfil Loc. B.	E. A. Johnson	do.
*Laundry Fittings, Cooking Coppers, &c...	Edmonton Union	T. E. Knightley	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Public Library and Baths, Lochee	Dundee Corp.	J. M. Robertson.....	Aug.
*Roadmaking and Paving Works	Willesden Local Board	O. Claude Robson	do.
*Gas Fittings to Hospital, Stonebridge	do.	do.	do.
House and Three Cottages, Bodmin-road Station, Cornwall	G. W. R. Co.	*Official*	do.
Three Cottages, Cwmbach, Aberdare	do.	do.	do.
Reconstructing Baths, Guildford-crescent	Cardiff Corporation ..	W. Harpur	Aug. 8
*Tooled Yorkshire Stone	Greenwich Bd. of Wks.	*Official*	do.
Two Houses, Newcastle, co. Down	Alex. Mulligan	Henry Hobart.....	Aug. 12
*Water Supply Works	Lostwithiel (Cornwall) Corporation	S. W. Jenkin & Son ..	Aug. 13
*Alterations and Additions, Even Schools	Swindon School Board	W. Drew	do.
*Drainage Works	Hardingstone Loc. Bd.	J. Ingman.....	do.
Two Cottages, Outfall Works, Greasley, Notts	Basford R.S.A.	Herbert Walker.....	do.
Additions to Victoria Hall, Exeter	Church Congress.....	E. H. Harbottle	do.
*Boundary Walls and Oak Fencing	Islington Vestry.....	J. P. Barber	do.
*Cast-iron Pipes	Slough U. S. A.	J. Baker.....	Aug. 16
*Stoneware Pipe Sewer, &c.	do.	do.	do.
*Carting and Laying Cast-iron Pipes	do.	do.	do.
Street Works, near Stallard-street, Trowbridge	Toley, Son, & Mundy	.....	Aug. 18
*Norway Kerb and Channelling	Kingston-upon-Thames Corporation	*Official*	Aug. 21
Schools and Residence, The Bourne	Farnham Sch. Bd.	P. H. Watson	No date
*School Buildings, &c.	do.	do.	do.
Offices, Stores, &c. Bleachworks, Bircle, near Bury	O. Ormerod	C. H. Openshaw	do.
Engine House, &c. Netherfield Mill, Cleckheaton	.....	Jas. Young & Co.....	do.
House and Shop, Ashton-under-Lyne	.....	T. D. Lindley	do.
Chapel and School, New Basford, Notts...	.....	Hy. Harper	do.
Church Schools, Wetherby, Yorks	.....	A. A. Gibson	do.
Shop and Premises, Library-street, Wigan	.....	W. E. V. Crompton ..	do.
*Additions, &c to Church, Southsea	.....	W. A. Coombs.....	do.
Kerbing and Forming, Clifton-street, Bradford	.....	Empsall & Clarkson ..	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*County Surveyorship (Ireland)	Civil Service Com.	.....	Aug. 8
*Clerk of the Works	Derby Technical Institution Committee ..	3*l.* 3*s.* weekly	Aug. 16
*Architect	L. C. C. Asylum Com.	800*l.*	Oct. 1

Those marked with an asterisk (*) are advertised in this Number. *Competition, p. iv.* *Contracts, pp. iv., vi., viii. and xx.* *Public Appointments, p. xviii.*

JULY 13.—13,529, W. Matthews, Combination inlet and outlet for Baths, Lavatories, &c.—13,534, A. Hocking, J. R. Hall, Securing Sash Window Cords, &c.—13,556, S. Hill and R. Hodges, opening and closing Fanlight Windows, &c.—13,593, E. Lovegrove, Chimney Cowl.

JULY 14.—13,607, R. Ardagh, Wooden Blocks for Paving and Flooring.—13,617, P. Hitchcock, Syphon Cisterns.—13,625, G. Pollard, Window Sash Fasteners.

PROVISIONAL SPECIFICATIONS ACCEPTED.

8,540.—R. Silverwood, Sliding Sashes or Windows.—10,063, T. Greenway, Iron or Steel Flanged Paling.—11,345, P. Mooney, Gully and other Traps.—12,021, C. Wenste, Apparatus for closing and opening Gas-pipes or connexions, 12,232.—G. Redfern, Door-closing devices.—12,263, J. Coulthurst, Socketted Earthenware Drain-pipes.—12,268, W. Jenkinson and T. Cartwright, Syphon Flush Cistern for Water-closets, &c.—12,291, W. Hassall and H. Sansom, Kilns.—12,299, A. Protheroe, Paint.—12,321, F. Parkin, Sewer Gas-traps.—12,322, W. Rodgers, Syphon Flushing Cisterns.—12,383, M. Ahern, Glazing and Enamelling Bricks, &c.—12,500, A. Rousseau, Brick-presses.—12,636, A. Marshall, Ventilators and Chimney Cans.—12,838, W. Lynch, Slate and Tile Fastener with sliding collar and pin.—12,915, E. Weidlich, Ventilating Railway Tunnels.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

16,814, T. Hyom, Door Fastener—16,994, F. Davey, Disinfecting Water-closets and Urinals.—17,227, L. Forsberg, Planes.—21,867, E. Green, Drain-traps.—3,430. G. Newman, Spring Hinges.—4,786, C. Berger and J. Thywissen, Roofing-tile.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JULY 16.—By *H. Hooper:* 6, Lambert Villas, Brixton, u.t. 79 yrs., g.r. 6*l.* 15*s.*, 240*l.*—By *A. Richards:* 13 to 19 and 19a, North-pl., Mile End, f., 1,995*l.*; 44 to 54 (even), Weaver-st., Bethnal Green, u.t. 6 yrs., and 2 yrs., g.r. 12*l.*, 85*l.*—By *Alderton & Co., and D. J. Chattell:* "Oakwood" and 9½ acres, Chislehurst, f., sold before auction.—

JULY 17.—By *G. Head & Co.:* 7b, Park-rd., Regent's-pk., u.t. 11 yrs., g.r. 15*l.*, 230*l.*; 4, Blomfield-rd., Maida Vale, u.t. 43 yrs., g.r. 5*l.*, r. 63*l.*, 600*l.*—By *Messrs. Willmott:* f.g.r. of 70*l.*, Southbrook-st., Shepherd's Bush, reversion in 58 yrs., 1,585*l.*—By *Ventom, Bull & Cooper:* 41, 43, 49, Priory-pk.-rd., Kilburn, f., r. 112*l.*, 1,450*l.*—By *Chesterton & Sons:* 42, Pembridge-rd., Notting Hill, u.t. 59 yrs., g.r. 7*l.*, r. 50*l.*, 630*l.*; 45, Pembridge-rd, u.t. 56 yrs., g.r. 7*l.*, r. 38*l.*, 440*l.*; 10, Phillamore-ter., Kensington, u.t. 45 yrs., g.r. 6*l.* 10*s.*, 690*l.*; 22, Phillamore Gardens (Upper), u.t. 51 yrs., g.r. 35*l.*, 3,200*l.*; 8, Pembroke Mews, u.t. 23 yrs., g.r. 4*l.* 4*s.*, 310*l.*—By *Mullett, Booker, & Co.:* 30, Eastbourne-ter., Hyde-pk., u.t. 44 yrs., g.r. 15*l.*, 650*l.*—By *W. Houghton:* "Essex House," Vicarage-rd., Leyton, f., 500*l.*; a plot of f. land, 80*l.*—By *Dunn & Soman:* 41, Hackney-rd., Shoreditch, f., r. 50*l.*, 800*l.*; 3, 4, 5, Park-st., Dorset-sq., u.t. 4 yrs., g.r. 9*l.* 19*s.* 6*d.*, 45*l.*; l.g.r. of 53*l.* 11*s.*, Tredegar-rd., Bow, u.t. 40 yrs., g.r. 8*l.* 7*s.*, 800*l.*; l.g.r. of 15*l.*, Moreville-st., u.t. 44 yrs., g.r. 7*l.*, 135*l.*; l.g.r. of 8*l.*, Caxton-st., u.t. 52 yrs., g.r. 10*s.*, 125*l.*; l.g.r. of 30*l.*, Addington-rd., u.t. 52 yrs., g.r. 15*s.*, 540*l.*; l.g.r. of 6*l.* 18*s.*, Fairfield-rd., u.t. 35 yrs., 85*l.*; l.g.r. of 21*l.*, u.t. 34 yrs., 310*l.*; l.g.r. of 8*l.*, Old Ford-rd., &c., u.t. 53 yrs., g.r. 6*l.*, 35*l.*; Nos. 127, 129, Bow-rd., u.t. 38 yrs., g.r. 10*l.* 10*s.*, r. 115*l.*, 1,490*l.*—*By Debenham, Tewson, & Co.:* F.g.r. of 65*l.*, Station-bldgs., Catford, reversion in 94 yrs., 1,650*l.*; f.g.r. of 218*l.* 10*s.*, Nelgarde-rd., reversion in 94 yrs., 5,490*l.*; f.g.r. of 262*l.* 10*s.*, Doggett-rd., reversion in 94 yrs., 6,900*l.*

JULY 18.—By *Wriford & Dixons:* 37, Newington-cres., Newington, f., r. 40*l.*, 560*l.*; 7, 8, Taysaam-pl., Enfield, f., r. 46*l.*, 800*l.*—By *John Bott:* 321, Milkwood-rd., Herne Hill, u.t. 81 yrs., g.r. 7*l.*, 400*l.*—By *Hobson, Richards, & Co.:* 82, Ewart-rd., Forest Hill, u.t. 82 yrs., g r. 4*l.* 10*s.*, 110*l.*; 284, Essex-rd., Islington, u.t. 23 yrs., no g.r., r. 64*l.*, 335*l.*; 263, Landcroft-rd., Dulwich, u.t. 81 yrs., g.r. 5*l.* 10*s.*, 155*l.*—By *Horne, Son & Eversfield:* 12, Gloucester-sq., Hyde-pk., u.t. 41 yrs., g.r. 10*l.*, 2,210*l.*; 3, 5, New Cross-rd., New Cross, u.t. 29 yrs., g.r. 18*l.* r. 74*l.*, 385*l.* — By *S. B. Clark & Son:* 53, Wimpole-st., Cavendish-sq., u.t. 22 yrs., g.r. 60*l.*, r. 340*l.*, 2,500*l.*; 12, Baronsfield-rd., St. Margarets, u.t. 86 yrs., g.r. 7*l.* 10*s.*, r. 32*l.*, 335*l.*—By *Stimpson & Sons:* 60, Wansey-st., Walworth, u.t. 48 yrs. g.r. 5*l.* 5*s.*, 315*l.*; 63, Gurney-st., u.t. 48 yrs., gr. 5*l.* 5*s.*, 315*l.*; 1 to 20, Winch-pl., u.t. 50 yrs., g.r. 50*l.*, 1,400*l.*; 5 to 19 (odd), Regency-st., Westminster, and 48 to 62 (evens), Page-st., u.t. 7 yrs., g.r. 3*l.* 15*s.* 10*d.*, r. 612*l.*, 2,600*l.*; 31 to 39 (odd), Peckham-pk.-rd., Old Kent-rd., u.t. 19 yrs., g.r. 37*l.* 10*s.*, 545*l.*; 1 to 8, Frensham-st., Peckham, u.t. 19 yrs. g.r. 52*l.* 10*s.*, 555*l.*—By *Debenham, Tewson & Co.:* F.g.r. of 250*l.*, Cock-lane, West Smithfield, reversion in 83 yrs., 5,500*l.*; 1 to 19, Lemons-ter., Stepney, and 3, 4, 5, Hayfield Passage, u.t. 44 yrs., g.r. 36*l.* 10*s.*, 2,630*l.*—By *Newbon & Co.:* I.g.r. of 44*l.*, Wellington-rd., Holloway, u.t. 49 yrs., g.r. 15*l.*, 550*l.*; f.g.r. of 31*l.*, Liverpool-rd., reversion in 39 yrs., 1,220*l.*; f.g.r. of 35*l.*, Victoria-rd., reversion in 39 yrs., 1,000*l.*; f.g.r. of 272*l.* 10*s.*, St. Ervan's-rd., Kensington, reversion in 72 yrs., 7,245*l.*; i.g.r. of 161*l.* 16*s.*, Eastbourne-ter., Paddington, u.t. 44 yrs., g.r. 4*l.*, 2,750*l.*

JULY 20.—By *Ellis & Son:* 17, St. Mary-at-Hill, Eastcheap, f., r. 220*l.*, 4,400*l.*—By *F. Jolly & Co.:* 154, Evering-rd., Stoke Newington, u.t. 82 yrs., g-r. 8*l.* 10*s.*, r. 55*l.*, 540*l.*—By *Bedford & Co.:* 2, 3, 4, Elizabeth Mews, Hampstead, u.t. 69 yrs., g.r. 9*l.*, r. 85*l.*, 750*l.*; 16, England's-lane, and stabling, u.t. 69 yrs., g.r. 19*l.* 10*s.*, r. 130*l.*, 1,460*l.*; 8 and 10, Elizabeth Mews, u.t. 69 yrs., g.r. 6*l.*, r. 90*l.*, 505*l.*—By *W. Bradly:* 135 to 138, Evelyn-st., Deptford, u.t. 67 yrs., g.r. 19*l.* 10*s.*, 240*l.*; 62, 64, Addey-st., u.t. 51 yrs., g.r. 5*l.*, 1,030*l.*; 31 to 47 (odd), Hosier-st., u.t., 51 yrs., g.r. 20*l.*, 1,030*l.*; 56, 58, Addey-st., u.t. 51 yrs., g.r. 5*l.*, 200*l.*; f.g.r. of 6*l.* 10*s.*, Hyde-st., reversion in 72 yrs., 160*l.*; f.g.r. of 3*l.*, Adolphus-st., ditto in 84 yrs., 80*l.*; 63, 65, South-st., Greenwich, u.t. 17 yrs., g.r. 45*l.*, r. 57*l.* 10*s.*, 55*l.*; f.g.r. of 37*l.* 16*s.*, Conduit-st., reversion in 27 yrs., 935*l.*; 70, 72, Greenwich-rd., u.t. 83 yrs., g.r. 14*l.*, r. 70*l.*, 850*l.*; "Eversleigh," Eltham-rd., Lee, u.t. 70 yrs., g.r. 20*l.*, 330*l.*—By *Graves & Son:* 1 to 8, Kelso-pl., Edgware-rd., u.t. 27 yrs., no g.r., r. 152*l.* 2*s.*, 700*l.*; 67 Princess-st., u.t. 46 yrs., g.r. 5*l.* 10*s.*, r. 32*l.*, 300*l.*, 36, 38, Loudoun-rd., St. John's Wood, u.t. 43 yrs., g.r. 20*l.* r. 125*l.*, 1,050*l.*; 89, the High-st., u.t. 25 yrs., g.r. 5*l.* 5*s.*, r. 65*l.*, 655*l.*—By *Physick & Lowe:* "Jesmine," Hambalt-rd., Clapham, u.t. 96 yrs., g.r. 6*l.* 10*s.*, r. 42*l.*, 320*l.*; "Eglantine" and "Syringa," u.t. 96 yrs., g.r. 13*l.*, r. 82*l.* 660*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.				**TIMBER** (*continued*).			
Greenheart, B.G.	ton	8/0/0	0/0/0	Satin, Porto Rico	0/0/6	0/1/6
Teak, E.I. .. load		10/0/0	26/0/0	Walnut, Italian ..	0/0/3½	0/0/7
Sequoia, U.S. ft. cu		2/3	2/6			
Ash, Canada load		2/15/0	4/0/0	**METALS.**		
Birch, do.		2/10/0	3/15/0	Iron—Pig, in Scotland	ton	2/1/10½	0/0/0
Elm, do.		3/10/0	4/15/0	Bar, Welsh, in London		5/12/6	5/15/0
Fir, Dantsic, &c.		2/5/0	3/5/0	Do. do. at works in Wales		5/2/6	5/5/0
Oak, do.		2/10/0	4/10/0	Do. Staffordshire, in London		6/0/0	6/10/0
Canada		6/0/0	7/10/0	COPPER—British cake and ingot		40/10/0	41/0/0
Pine, Canada red		2/15/0	3/5/0	Best selected ..		41/0/0	41/10/0
Do. Yellow		2/15/0	5/0/0	Sheets, strong ..		49/0/0	0/0/0
Lath, Dantsic, fath		4/10/0	5/10/0	Chili. bars		38/2/6	38/5/6
St. Petersburg..		5/0/0	6/10/0	YELLOW METAL	lb	0/0/4	0/0/4½
Wainscot, Riga, &c., log		2/10/0	4/15/0	LEAD—Pig, Spanish	ton	9/7/6	9/8/9
Odessa, crown		2/10/0	4/15/0	English com. brands		9 8/9	9/12/3
Deals, Finland and 2st std	100	7/10/0	9/10/0	Sheet, English, 6 lbs. per sq. ft. and upwards		10/15/0	0/0/0
Do. 4th & 3rd ..		7/0/0	8/10/0	Pipe		11/5/0	0/0/0
Do. Riga		7/10/0	9/0/0	ZINC—English sheet	ton	19/0/0	19/0/0
St. Petersburg, 1st yellow		10/0/0	13/10/0	Vieille Montagne		19/10/0	0/0/0
Do. and yellow		8/10/0	10/5/0	TIN—Straits		66/15/0	67/5/0
Do. white		8/10/0	11/0/0	Australian		67/5/0	67/15/0
Swedish		7/10/0	15/10/0	English Ingots..		70/10/0	71/0/0
White Sea		7/0/0	15/10/0	Banca		70/0/0	70/10/0
Canada, Pine 1st		22/10/0	29/0/0	Billiton		68/0/0	68/10/0
Do. do. 2nd		17/0/0	18/0/0				
Do. do. 3rd, &c.		7/10/0	10/5/0	**OILS.**			
Do. Spruce, 1st		9/0/0	11/0/0	Linseed	ton	20/0/0	20/5/0
Do. do. 3rd & 2nd		6/10/0	7/10/0	Cocoanut, Cochin		28/0/0	28/10/0
New Brunswick		6/0/0	7/5/0	Do. Ceylon		23/0/0	23/5/0
Battens, all kinds		8/0/0	15/0/0	Palm, Lagos		23/0/0	0/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6	0/14/6	Rapeseed, English pale		21/0/0	21/5/0
Do. 2nd		0/7/0	0/11/6	Do. brown		19/0/0	19/5/0
Other qualities—		0/5/0	0/6/6	Cottonseed ref.		20/0/0	21/0/0
Cedar, Cuba .. ft.		/3½	/4½	Oleine		22/0/0	24/0/0
Honduras, &c.		/3½	/4½	Lubricating, U.S.		4/0/0	5/0/0
Mahogany, Cuba		/3½	/6	Do. refined		5/0/0	12/0/0
St. Domingo, cargo av.		/3	2/6	TAR—Stockholm	barrel	0/22/0	0/0/0
Mexican do. do.		/3	/4	Archangel		0/21/0	0/0/0
Tobasco do. do.		/3½	/6				
Honduras do. ..		/3½	/5½				
Box, Turkey	ton	4/0/0	13/0/0				
Rose, Rio		7/0/0	28/0/0				
Bahia		6/0/0	17/0/0				
Satin, St. Domingo		0/0/5	0/1/0				

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursday.*]

BECKENHAM.—For making-up Marlow-road, for the Local Board. Mr. J. A. Angell, C.E., Surveyor, Local Board Offices, Beckenham:—

Mayo & Co.	£3,285	2	0
Fry Brothers	3,220	19	4
A. & F. Manuell	3,092	8	11
Sidney Hudson	£2,985	9	7
Mowlem & Co., Westminster*	2,896	0	0

* Accepted.

BLYTH (Northumberland).—For the erection of school buildings, Cowpen-quay, for the Cowpen U.D. School Board. Mr. J. H. Morton, architect, 50, King-street, South Shields:—

H. Brown & Co., Newcastle-on-Tyne £3,981

BOSTON (Lincolnshire).—For the erection of a villa residence on the Sleaford-road, Boston. Mr. Jas. Rowell, architect, Boston:—

Bricklayer, Mason, Slater, Plasterer, Carpenter, and Joiner.

H. Hinds	£550	J. Lucas	£480
C. Jessop	548	H. W. Parker (accepted)	462

Grates and mantels not included.

Gas Fitter, Bell-hanger, Plumber, Glazier, and Painter.

J. Edgley	£78 0	V. J. Kime	£56 5
A. E. Griffin	56 10	B. F. Parker (accepted)	56 0

BOSTON (Lincolnshire).—For erecting warehouse and workrooms at bakery premises in Market-place, Boston, for Mr. Morris Greenberg. Mr. James Rowell, architect, Boston:—

W. Greenfield	£498	J. Lucas	£460
Pinder & Son	496	H. Hinds	446
H. W. Parker	475	C. Jessop (accepted)	440

BRAINTREE.—For kerbing, channelling, and other contingent work, for the Braintree Local Board. Mr. J. H. Jevons, Engineer and Surveyor:—

W. Griffiths, Kingsland-road, N.E. (accepted)	£201 5 8
R. A. Bonnett	196 14 4

CARDIFF.—For new staircase and cloak-room at the S. German's Schools, Metal-street, for the Rev. R. J. Ives. Messrs. Veall & Sant, architects:—

Shepton & Son	£199 15	Knox & Wells	£193 0
O. Furnell	195 0	Melhuish Bros.*	170 0

*Accepted.

CARDIFF.—For new class-room, latrines, &c., Crofts-street School, Roath, for the Rev. F. J. Beck. Messrs. Veall & Sant, architects:—

Melhuish Bros.	£405 0 0	Knox & Wells	£330 0 0
Shepton & Son	388 6 0	W. Cox (accepted)	328 14 9
O. Furnell	375 0 0		

CARLTON (Notts.).—Accepted for the construction of a brick culvert; also for walling, shedding, &c., for the Local Board. Mr. R. Whitbread, surveyor, Burton-road, Carlton. Quantities by surveyor:—

Culvert.

Wheatley, 135, Sherwood-street, Nottingham	£828

Walling.

A. Key, Carlton, Notts	55

Shedding.

W. Key, Carlton, Notts	135

EASTLEIGH (Hants).—For the erection of engine and boiler house, chimney-shaft, and cottage, for the Local Board. Mr. H. J. Weston, C.E., 24, Portland-street, Southampton:—

Playfair & Toole	£926 0	J. Treherne	£816 0
H. W. Bull	897 0	W. Beale, Eastleigh*	779 10

*Accepted.

GT. BADDOW (Essex).—For the erection of a new house for Dr. Hart. Mr. F. Whitmore, architect, Chelmsford:—

Moss & Co.	£1,250	E. West	£950
J. Rayner	992	H. Potter, Chelmsford*	900

*Accepted.

HARROGATE.—For the erection of a detached residence, Clarence Drive, Cornwall-road, for Mr. Llwellyn J. Cocks. Mr. T. Butler Wilson, architect, Harrogate. Quantities by the architect:—

Masonry and Bricklaying.—John Stephenson, Oaklands, Harrogate	£630 9 0
Joinery.—Raworth & Allen, 2, Buelah-street, street, Harrogate	340 0 0
Slating.—T. E. Heavyside, Roundhay-road, Leeds	51 15 0
Plumbing.—G. Thompson, Park-lane, Leeds	99 0 0
Plastering.—J. Dobson, Carey-street, Hunslet, Leeds	87 7 3

HILL HEAD, FAREHAM.—For the erection of a detached villa residence, for Mrs. H. M. Warner. Mr. Walter Judd, architect and surveyor, Stubbington, near Fareham. Quantities supplied:—

J. Cockerell	£660	C. Wareham	£560
Plummer & Son	605	W. Russell	550
T. P. Hall	590		

Amended Estimates.

C. Wareham	£482
W. Russell, Fareham (accepted)	398

LEIGHTON-BUZZARD.—For the erection of new boys' school in Beaudesert, for the School Board. Mr. J. T. Lawrence, architect, Leighton-Buzzard, Beds. Quantities by the architect:—

Tutt Bros.	£2,185	Hart	£2,030
F. Adams	2,147	D. Cook & Sons	1,998
G. Garside & Son	2,126	H. Edwards & Sons	1,900
Dawson	2,125	[All of Leighton.]	

[Architect's estimate, £2,000.]

LONDON.—For repairs to German Church, Goulston-street, Whitechapel. Mr. W. Stone, architect:—

Higgs	£221	Gregar & Son	£149
Balsam Bros.	200	Jarvis & Sons	147
Beale	185		

LONDON.—For building addition to 380, Bethnal Green-road, for Mr. W. Unwin. Mr. W. Stone, architect:—

Higgs	£885	Jarvis & Sons	£842
Beale	873	Knight & Sons	627
Thomerson & Son	859		

LONDON.—For alteration and repairs, 75, Green-street, Bethnal Green. Mr. William Stone, architect, 2, Great Winchester-street, E.C.:—

F. G. Higgs	£421 10	Knight & Sons	£367 0
Bradford	349 0	A. Edwards	208 0

LONDON.—For the proposed new avenue, now in course of erection, for Mr. Joseph Carter Wood, on the ancient site in Westminster, known as the Artillery Brewery. Mr. John Calder, architect. Quantities by Mr. Edwd. Crutchloe, Albert Chambers, Victoria-street, S.W.:—

Contract No. 2.

William King & Son	£10,146

Accepted without competition at the schedule of prices upon which their accepted tender for Contract No. 1 was based.

LONDON.—For alterations and additions to the "Blind Beggar" public-house, Whitechapel-road, E., for Messrs. Mann, Crossman, & Paulin, Whitechapel, E. Mr. R. Spence, architect, 36, Ravenrow, E.:—

Josselyn & Young	£3,339	Dabbs	£2,866
Allen	2,900	Drew & Cadman	2,860
Coldwells & Son	2,899	George Wade, Chelsea*	2,798
Lilstone	2,891	*Accepted.	

LONDON.—For taking down and rebuilding No. 1, Newland-terrace, and for alterations to No. 19, Allen-terrace, Kensington, W., for Mr. J. Buckle; and also No. 2, Newland-terrace, for Mr. W. H. Dresden. Messrs. Eaves & Hardman, architects. Messrs. Mann & Son, surveyors:—

	No. 1.		No. 2.
Bovis & Co.	£5,297		£2,327
Kearley	5,200		2,189
Stimpson & Co.	5,100		2,140
H. L. Holloway	4,923		2,043
Turner & Co.	4,690		1,970

LONDON.—For alterations and additions to Nos. 271 and 273, Oxford-street, W., for the Aërated Bread Company. Mr. G. Edwards, architect:—

Scharien & Co.	£254	Hampton & Sons	£185
Ward & Lamble	185	Stimpson & Co.	160

LONDON.—For making the necessary alterations and additions to "Batchelor's," Piccadilly-place, W. Messrs. G. & W. R. Low, architects:—

Holliday & Greenwood	£1,175	Drew & Cadman	£1,054
Stimpson & Co.	1,085		

LONDON.—For rebuilding the "Royal George" Tavern, New-street, Kennington Park-road, S.E., for Mr. C. Dick. Messrs. F. J. Eedle & Meyers, architects, 8, Railway Approach, London Bridge, S.E. Quantities by Mr. H. Dow White, 52, Finsbury Pavement, E.C.:—

Gould & Brand	£3,148	Burman & Sons	£3,045
C. Ansell	3,091	Aviss & Co.	2,980
J. Marsland	3,085	Rider & Sons	2,975
Dearing & Son	3,080	Spencer & Co.	2,915
Whitehead & Co.	3,070	Young & Lonsdale*	2,887
J. Tyerman	3,050		

*Accepted.

LONDON.—Accepted for rebuilding the "London Apprentice" public-house, Old-street, St. Luke's, E.C. Mr. Ernest H. Abbott, architect, 6, Warwick-court, High Holborn, W.C. Quantities by Mr. A. Johnson, surveyor, 50, Imperial-buildings, Ludgate Circus, E.C.:—

J. O. Richardson, Albert Works, Peckham	£6,382 0 0

LONDON.—Accepted for construction of new roads and sewers on the Townley Park Estate, East Dulwich, S.E., for Mr. R. P. Tebb. Mr. F. A. Powell, 344, Kennington-road, S.E., surveyor:—

Mayo & Co., Peckford-palce Works, Brixton-road, S.W.	£1,240 0 0

LONDON.—Accepted for building four houses at Upper Norwood, S.E., according to plans supplied by M. H. Gordon, surveyor:—

W. Castle, Nunhead Green	£956 0 0

LONDON.—For alterations to the "Windsor Castle," Liverpool-street, Islington. Mr. E. J. Strevens, architect, 245, Camberwell-road:—

W. Jones	£380	King & Son	£320
Rowe & Son	339	Strevens Bros.	318
J. & W. Taylor	338	Peugh	294
Simpson & Cove	333	Bright	285

LONDON.—For additions to 89, Denmark Hill. Mr. E. J. Strevens, architect, 246, Camberwell-road, S.E.:—

Goad	£369 0	Courtney & Fairbairn	£283 0
Ham	358 16	King & Son	281 0
Whitehead	309 0	Simpson & Cove*	265 0
Hooper	283 0		

*Accepted.

LONDON.—For the enlargement of the Colls-road School, Peckham, by 200 places for the School Board for London. Mr. T. J. Bailey, architect:—

		For brickwork in cement, add
W. Downs	£6,791 0 0	£86 0
Lathey Bros.	6,670 0 0	85 0
J. Longley & Co.	6,593 0 0	95 0
J. Marshland	6,548 0 0	98 0
F. & H. F. Higgs	6,541 0 0	85 0
Henry Lovatt	6,429 10 10	79 9
J. Smith & Sons	6,332 0 0	90 0
Holiday & Greenwood, Brixton*	6,193 0 0	103 0

*Recommended for acceptance by the Works Committee.

LONDON.—For rebuilding the offices in connexion with all departments of the Scrutton-street School, Shoreditch, and for providing a new system of drainage at the same time, for the School Board for London. Mr. T. J. Bailey, architect:—

T. H. Jackson	£1,450	Lawrence & Sons	£1,195
S. Polden	1,390	Knight & Son, Tottenham*	1,195
Dent & Hellyer	1,230		

*Recommended by the Works Committee for acceptance.

LONDON.—For providing and fixing a complete system of low-pressure hot-water apparatus for warming the Hughes-fields School, Deptford, as enlarged, for the School Board for London:—

Fraser & Fraser	£536 0	Maguire & Son	£467 8
C. P. Kinnell & Co.	530 0	Wenham & Waters, Limited	450 0
Z. D. Berry & Sons	518 0	J. C. & J. S. Ellis, Sheffield*	419 10
W. H. Wharton	490 0		
W. G. Cannon	488 12		

*Recommended for acceptance by the Works Committee.

LONDON.—For refitting the boys' and girls' offices in connexion with the Alton-street School, Bromley, with stoneware troughs and automatic flushing-tanks, for enlarging and re-fitting the infants' offices, and for providing a new system of drainage at the same time, for the School Board for London:—

Knight & Son	£1,119 0	Johnson & Co.	£850 0
G. Parker	980 0	W. & H. Castle, Southwark Bridge-road*	816 0
J. T. Robey	947 0		
G. Newton	877 10		

*Recommended for acceptance by the Works Committee.

LONDON.—For providing a new vertical hot-water boiler and making the necessary connexions with the heating apparatus at the Berner-street School, Whitechapel, for the School Board for London:—

G. Davis	£150 0	Z. D. Berry & Sons	£138 0
J. Wontner-Smith, Gray, & Co.,	147 10	Rosser & Russell, Ltd.	132 16
T. Green & Son, Ltd.	145 0	W. G. Canon	122 0
Fraser & Fraser	144 0	Purcell & Nobbs	113 10
Wenham & Waters, Ltd.	140 0	J. C. & J. S. Ellis, Sheffield (accepted)	109 10

*Recommended for acceptance.

LONDON.—For providing and fixing a small low-pressure hot-water apparatus for warming the hall and two class-rooms in the new building at the "Victoria" School, Starch Green, for the School Board for London:—

W. G. Cannon	£148 10	J. C. & J. S. Ellis	£82 10
T. Potter & Sons, Ltd.	97 10	Maguire & Son	78 18
Z. D. Berry & Sons	97 0	Vaughan & Brown, Kirby-street, E.C.*	76 0
G. Davis	96 0		

*Recommended for acceptance by the Works Committee.

LONDON.—For sanitary work, repairs, painting, &c., at No. 12, Roland Gardens, South Kensington, W., for Mr. H. T. Phipps. Messrs. Baker & Turril, architects, Effingham House, Arundel-street, Strand, W.C.:—

J. & T. Shiers	£1,083 0 0	W. H. Smith	£815 10 0
T. Anderson	988 10 0	R. E. Noble	770 0 0
W. Dover & Son	905 17 3	Wetherill, Lee, & Martin	769 10 0
O. Craske	899 0 0	Simmonds Bros.	705 0 0
T. Heath	875 0 0	H. Smith & Sons (withdrawn)	639 0 0
Bullman & Dales	853 0 0		
Grant	832 0 0		

LONDON.—For repairing, painting, whitewashing, &c., the interior, and painting the exterior and ironwork and other works at the workhouse, Parish-street, and the infirmary and casual wards, Rotherhithe, for the Guardians of the St. Olave's Union. Messrs. Newman & Newman, architects, 31, Tooley-street, London Bridge:—

Proctor	£2,339	Vigor	£1,908
Pritchard & Renwick	2,200	Bullers, Bermondsey*	1,840
Mills	2,179	*Accepted.	

LONDON.—For the provision of a school for special instruction on the Hugh Myddleton Site, Clerkenwell, for the School Board for London. Mr. J. T. Bailey, Architect:—

		For brickwork in cement, add
W. M. Dabbs	£3,339	£61
J. Grover & Sons	3,320	61
Killby & Gayford	3,286	65
Staines & Son	3,226	47
W. Gregar & Son	3,207	52
C. Cox	3,112	61
J. & M. Patrick	3,106	67
E. Lawrance & Sons	3,090	61
N. Linstone, Blackstock-road, N.	2,974*	47*

*Recommended for acceptance by the Works Committee.

LONDON.—For the provision of a cookery centre in connexion with the Park-walk School, King's-road, Chelsea, for the Schoo Board for London. Mr. J. T. Bailey, Architect:

		For brickwork in cement, add
W. King & Son	£868 0 0	£18
G. & F. Kent	822 0 0	16
F. T. Chinchin	758 15 9	20
F. Gough & Co., Hendon	760 0 0*	13*

*Recommended by the Works Committee for acceptance.

LONDON.—For the provision of a cookery centre in connexion with the George-street School, Camberwell-road, for the Schoo Board for London. Mr. T. J. Bailey, Architect:—

		For brickwork in cement, add
J. Garrett & Son	£1,352 0 0	£24 0 0
A. Black & Son	1,313 0 0	30 0 0
J. & C. Bowyer	1,162 0 0	29 0 0
W. V. Goad	1,161 0 0	25 0 0
W. & H. Castle, Southwark-Bridge-road	1,051 0 0*	45 0 0*

*Recommended for acceptance by the Works Committee.

LONDON.—For the provision of cookery and laundry centres on the site in Melvin-road, Penge, for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brickwork in cement add
A Black & Son	£1,952	£56
J. Garrett & Son	1,802	46
G. H. Martin & Co.	1,775	51
M. Calnan & Co.	1,755	36
J. & C. Bowyer	1,744	54
H. Leney, Penge	1,693*	36

*Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Lavender Hill School by 400 places, &c., for the School Board for London. Mr. T. Bailey, Architect:—

		For brickwork in cement, add
G. E. Wallis & Sons	£9,553	£156
J. Shillitoe & Son	9,110	173
Holliday & Greenwood	8,649	173
Lathey Bros.	8,454	155
Holloway Bros.	8,474	138
J. & M. Patrick	8,463	173
J. Longley & Co.	8,343	170
S. & W. Pattinson	8,300	173
H. Lovatt	8,152	156
Stimpson & Co., Brompton-rd., N.	7,950*	207*

*Recommended for acceptance by the Works Committee.

LONDON.—For the enlargement of the Lillie-road Schoo Fulham, by 395 places, for the London School Board. Mr. T. Bailey, Architect:—

		For brickwork in cement, add
R. A. Yerbury & Sons	£5,489	£74
W. King & Son	4,887	53
Foster & Dicksee	4,708	52
E. Lawrance & Sons	4,610	73
J. & M. Patrick	4,539	74
J. Smith & Sons	4,537	74
Stimpson & Co., Brompton-road	4,430*	88*

*Recommended for acceptance by the Works Committee.

LONDON.—For the provision of cookery and laundry centres, &c., in connexion with the Kenmont Gardens School, Harrow-road, for the School Board for London. Mr. T. J. Bailey, Architect:—

		For brickwork in cement, add
R. A. Yerbury & Sons	£1,392	£48 10
Cowley & Drake, Willesden Green, N.W.	1,188*	49 0*

*Recommended for acceptance by the Works Committee.

LONDON.—For proposed erection of our houses, Montford-place, Kennington-road, for Mr. Pattison. Mr. John A. J. Woodward, architect:—

Long	£2,990	J. Hooper	£2,755
Parsons	2,920	Burman & Sons	2,743
Marsland	2,877	J. Ford	2,596
Edwards & Medway	2,797		

LONDON.—For proposed erection of two houses, Tinworth street, Albert Embankment, for Mr. J. Cookson. Mr. John A. Woodward, architect:—

Burman & Sons	£1,745	J. Ford	£1,547
Marsland	1,675	Parsons	1,520
Long	1,660	Edwards & Medway	1,489
T. Hooper	1,595	Quennell	1,375

LONDON.—For alterations and decorations at the Thatched House Club, St. James'-street. Mr. R. C. Murray, architect, 1, Racquet-court, Fleet-street, E.C.:—

Barker	£130	Wetherill, Lee, & Martin	£119
Styles & Sons	125		

LONDON.—For cleaning and painting, &c., at the Samaritan Free Hospital, Marylebone-road, N.W. Messrs. Baker & Turrill, architects, Effingham House, Arundel-street, Strand, W.C.:—

Henry Smith & Sons	£299 7 6	Nye	£197 0 0
W. Nash	285 5 0	Wetherill, Lee, & Martin	192 10
Holdstock	241 18 0		
Simmonds Bros.	233 8 0		

SHEPPERTON (Middlesex).—For the erection of a dwelling house, Littleton, for Mr. George Bravington. Mr. Charles Welch architect, London-street, Chertsey:—

F. B. Pitcher	£1,512 7 0	B. Ingram & Co.	£1,245 10
H. Dee	1,467 0 0	H. G. Nesmyth	1,243 0
Gray	1,257 0 0	Messrs. T. Knight & Sons, London-street, Chertsey*	1,224 0
R. J. Hunt	1,250 0 0		
J. Martin	1,247 0 0		

*Accepted.

[Mr. Bravington finds all bricks, sand, and gravel.]

SOUTH SHIELDS.—For the construction of a main sewer, &c. East and West Boldon to Brockley Whins, for the Union Rural Sanitary Authority. Mr. J. H. Morton, architect, 50, King-street, South Shields:—

M. D. Young, Hibburn	£3,321 10

STRETFORD.—For flagging Chester-road, for the Local Board. Mr. Royle, Surveyor, Local Board Offices, Old Trafford, Manchester. Quantities by Surveyor:—

M. Naylor & Sons, Manchester (accepted)	Schedule of prices.
Worthington & Pennall	
George Clarke	
Robert Lomax	
Robt. E. Jones	

NANTWICH.—For the erection of mortuary, tramp-wards, &c., at the Workhouse, for the Union Guardians. Mr. John Aldersey Davenport, architect, Heath Bank, Nantwich. Quantities by architect:—

N. H. Hulse	£333 0	J. T. Gresty	£272 10
Samuel Manley	312 5	John Harding, Nantwich*	247 10
John Matthews	298 0		

* Accepted.

NEWBURY.—For the construction of wall, &c., Pyle Hill, for the Corporation. Mr. E. A. Stickland, Borough Surveyor, Town Hall, Newbury:—

T. Taylor	£165 0 0	J. Townsend	£127 7 9
E. C. James	142 0 0	A. J. Chivers (accepted)	124 5 0

[All of Newbury.]

PICKERING.—For the erection of an aisle and the restoration of nave and chancel of Normanby Church. Mr. Temple Moore, architect, 46, Well Walk, Hampstead. Quantities by Mr. F. Cartwright, Sheffield:—

Yearsley, Pickering* £1,365 0 0

* Conditionally accepted.

SHENLEY (Herts).—For the erection of school offices, for the School Board. Mr. R. H. Hill, architect, 3, Lombard-court, Lombard-street, E.C.:—

Wm. Carter & Son	£140	Boff Bros., Park-street, St. Albans (accepted)	£89
Chas. Miskin	96		

SPALDING (Lincs.).—For additions, &c., to school buildings West Pinchbeck and Pode Hole, for the Managers of West Pinchbeck Schools. Mr. C. A. Watson, architect, Spalding:—

C. A. Watson, Spalding £560 0 0

STAFFORD.—For the erection of south wing, children's ward, and remodelling of administrative block, at the General Infirmary. Mr. Aston Webb, architect, 19, Queen Anne's-gate, Westminster, London, S.W. Quantities by Messrs. Corderoy & Selby, 19, Queen Anne's-gate, S.W.:—

Foster & Dicksee	£11,189	A. F. Whittome	£10,496
Willcock & Co.	11,093	H. Lovatt	9,761
J. Bowen	10,834	J. Gethin, Shrewsbury*	9,591

* Accepted.

STOCKPORT.—For the erection of engine- and boiler-house, and other buildings, &c. (Contract No. 3) Mr. A. M. Fowler, C.E., 1, Peter's-square, Manchester. Quantities by Messrs. Hurrell & Taylor, Brazennose-street, Manchester:—

A. Kellett	£26,421	T. & W. Meadows, Heaton Norris*	£20,360
James Byrom	25,041		
B. Morton	22,365		

* Accepted.

[Engineer's estimate, £21,000.]

STUBBINGTON (Hants.).—For alterations and additions to "The Villa," for the Misses Lanhom. Mr. Walter Judd, architect and surveyor, Stubbington, near Fareham:—

J. Plummer & Son	£650 0	C. Newbury	£583 0
C. Wareham	636 0	T. P. Hall	580 0
E. Totte	635 16	J. Crockerell	487 0

Revised Estimate.

C. Wareham, Stubbington (accepted) £590

TORQUAY.—For the erection of dwelling-house, &c., Kent's-road, for Mr. R. Smerdon. Mr. Edwd. Richards, architect, Manor Office, Torquay. Quantities by architect:—

J. Smerdon	£1,394 0	S. Peek	1,179 10
G. K. Smale	1,370 0	S. Blatchford	1,131 16
R. F. Yeo	1,324 0	J. Chubb	1,090 0
Vanstone & Mumford	1,295 0	C. Cocks	948 0
J. W. McKellar	1,245 0	J. Trethewey	943 0
W. A. Goss	1,212 0	W. Brenton (accepted)	876 10

[All of Torquay.]

ORD Leicestershire).—For additions and repairs to farm-house, &c. Messrs. Miles & Beasley, architects and surveyors, Leicester:—

J. Mason & Sons	£160 0 0
F. Sleath	150 0 0
W. Lockwood	123 10 0

WOODFORD.—For the erection of attendants' cottages at Claybury Asylum, for the London County Council:—

Kerridge & Shaw £7,876

WROXALL (Isle of Wight).—For laying water main, and other works, for the Rural Sanitary Authority. Mr. Theo. R. Saunders, engineer, Ventnor. Quantities by the engineer:—

J. S. Ineson	£1,635 12 6	F. Dandridge	£1,106 0 0
L. H. Green	1,350 0 0	A. C. Whittome & Co.	1,090 0 0
Peattie & Axtell	1,200 0 0	Barton Bros.	1,075 0 0
J. Harvey	1,180 0 0	D. H. Porter	1,070 0 0
H. Linington	1,168 0 0	A. Sims	1,010 0 0
Hughes & Gotto	1,156 13 4	G. C. Wheeler, 63, Union-st., Ryde, I.W. (accepted)	993 17 6
J. G. & W. Joliffe	1,155 0 0		
G. Hayles	1,150 0 0		
Shaw	1,130 0 0		

YEOVIL (Somerset).—For new road and sewer, Preston Grove estate, for Messrs. Vincent & Paynter. Messrs. C. & C. B. Benson, architects and surveyors, Yeovil:—

Kimber	£831 15	S. Saunders	£570 0
G. Troke	687 0	W. H. Saunders & Co., Bournemouth*	556 0
J. Power	650 0		
Lye & Sons	591 0		

* Accepted.

Re Barrett-Browning Memorial, Leabury.—In our last issue we gave the name of the accepted contractor as C. Hill; it should have been G. Hill.

TO CORRESPONDENTS.

F. V. (below our mark).—W. P. B.—W. G. S. (like some other things of the kind, the object seems very questionable).

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PUBLISHER'S NOTICES.

Registered Telegraphic Address, 'THE BUILDER,' LONDON.

THE INDEX and TITLE-PAGE for Volume LXVI. (Jan. to June, 1894) were given as a supplement with the number for July 14 last.

CLOTH CASES for Binding the Numbers, price 2s. 6d. each; also READING CASES (Cloth), with Strings, price 9d. each; also THE SIXTY-SIXTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, are now ready.

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Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" cannot be guaranteed for any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent

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Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

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218 and 220, High-street, Borough, S.E.

6 and 8, Hatton Garden.

47 and 49, St. Enoch-square.

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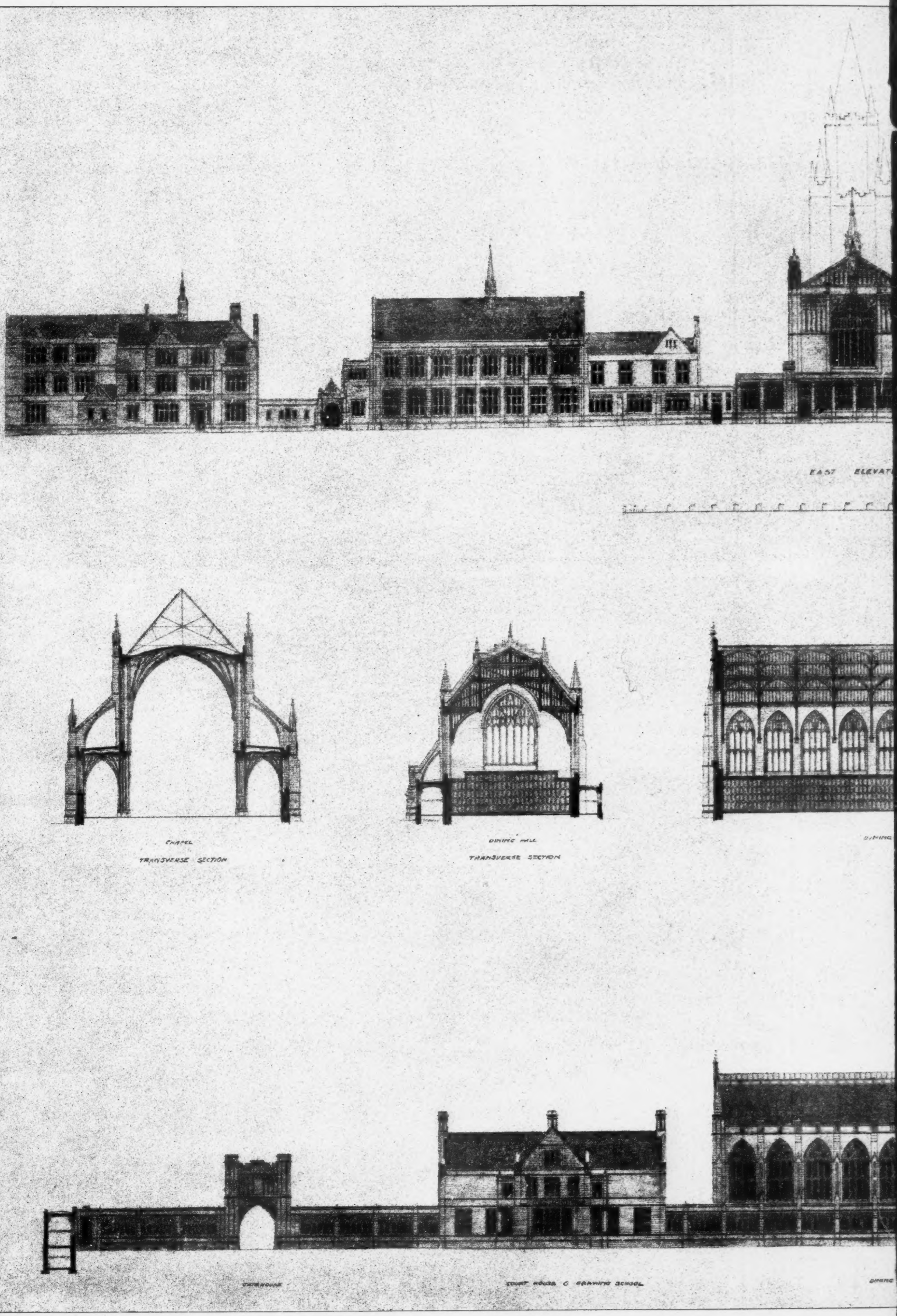
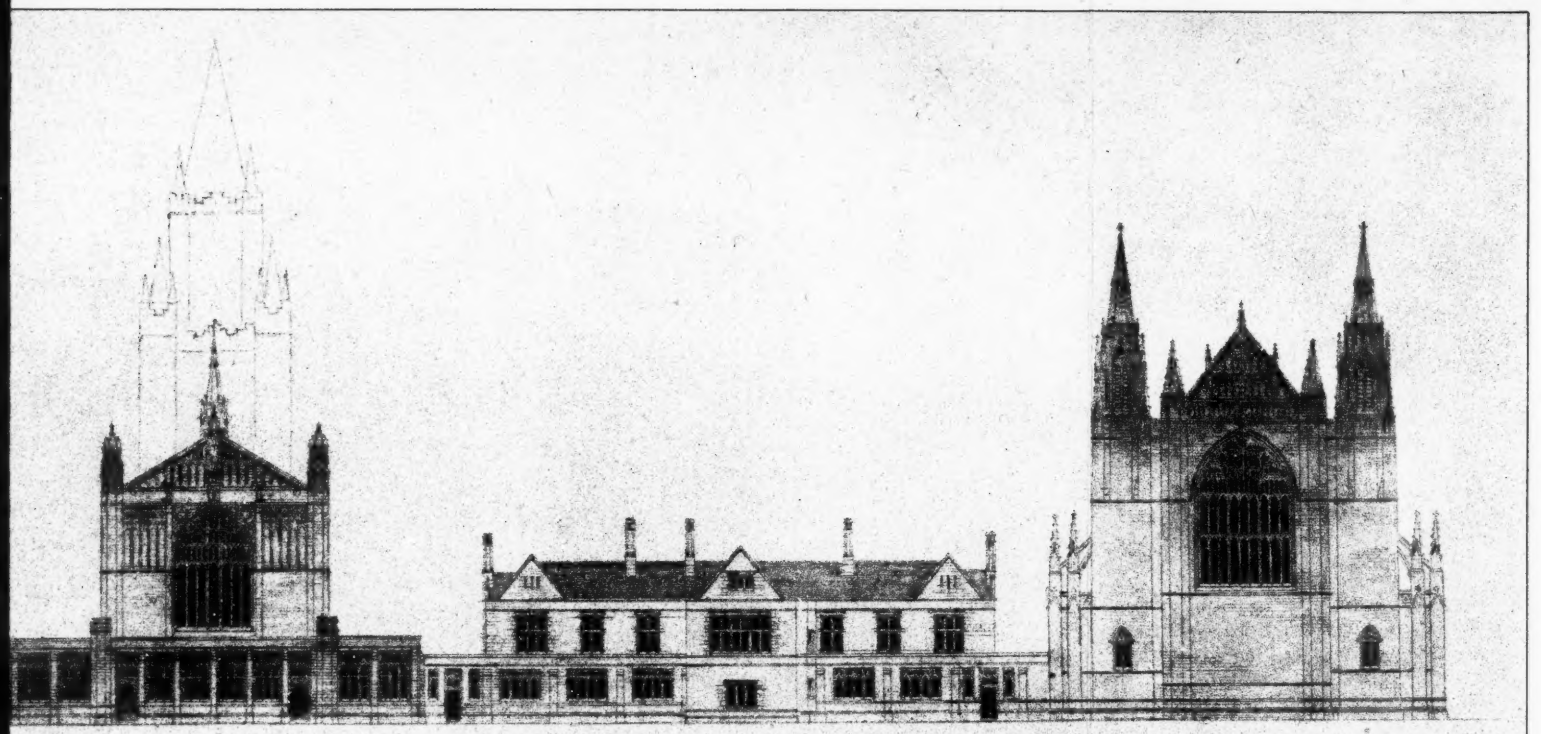
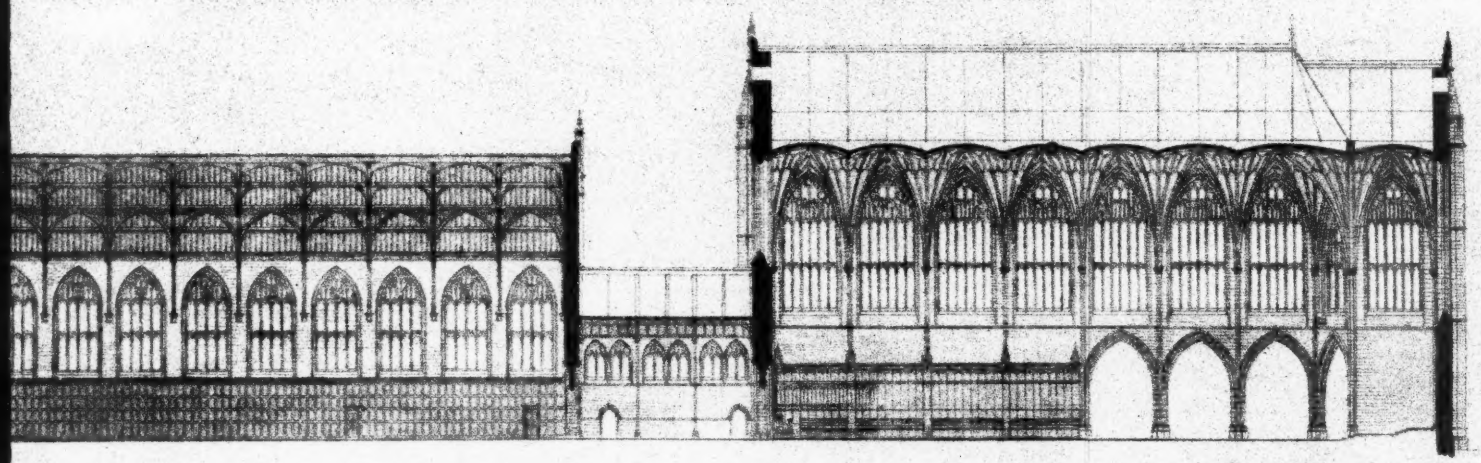


COMPETITION DESIGN FOR CHRIST'S HOSPITAL SCHOOLS.

ELEVATIONS AND SECTIONS OF VARIOUS

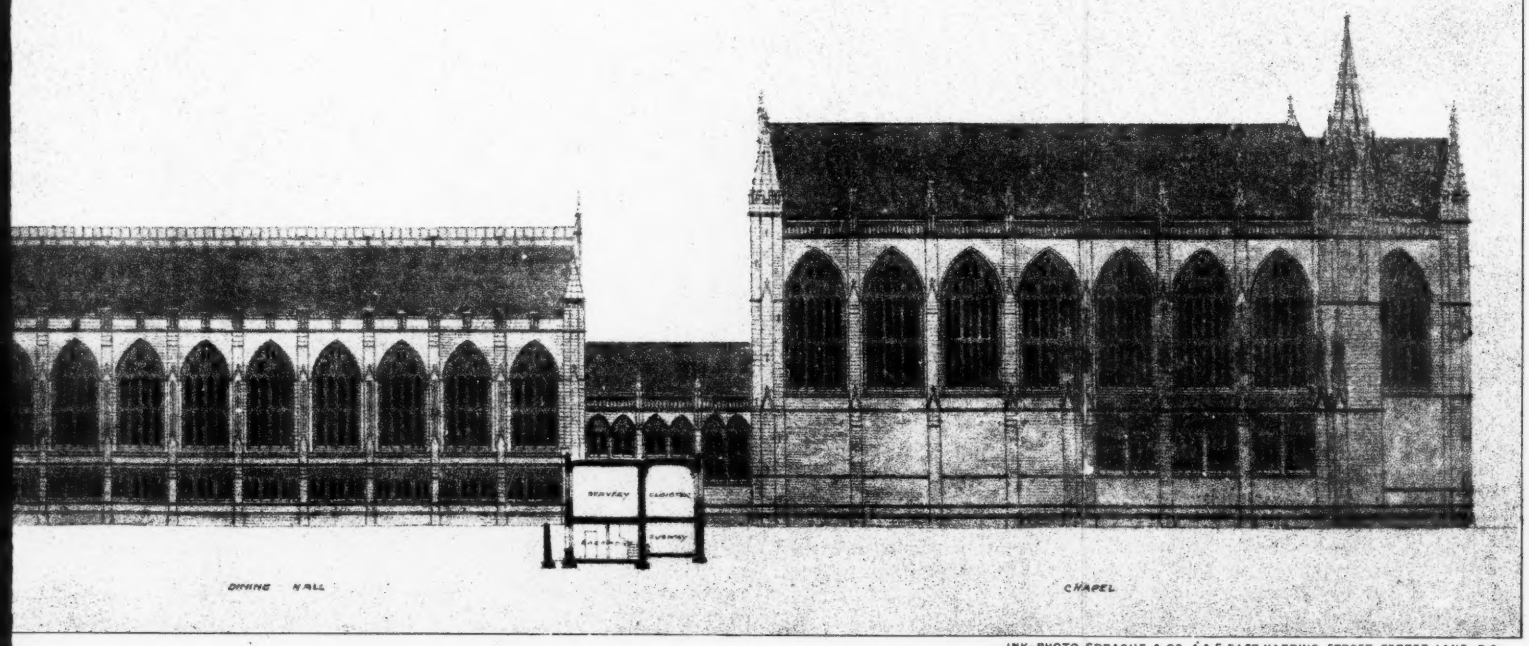


EAST ELEVATION



DINING HALL ANTE HALL CHAPEL

LONGITUDINAL SECTION



DINING HALL CHAPEL

INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

HOSPITAL SCHOOLS.—By Messrs. Carpenter & Ingelow.

SECTIONS OF VARIOUS BUILDINGS.

PHOTO-LITHO. SPRAGUE & Co. 4 & 5 EAST HARDING STREET FETTER LANE. E.C.

COMPETITION DESIGN FOR CHRIST'S HOSPITAL SCHOOLS.—By Messrs. Carpenter & Ingelow

VIEW OUTSIDE GATE-HOUSE.

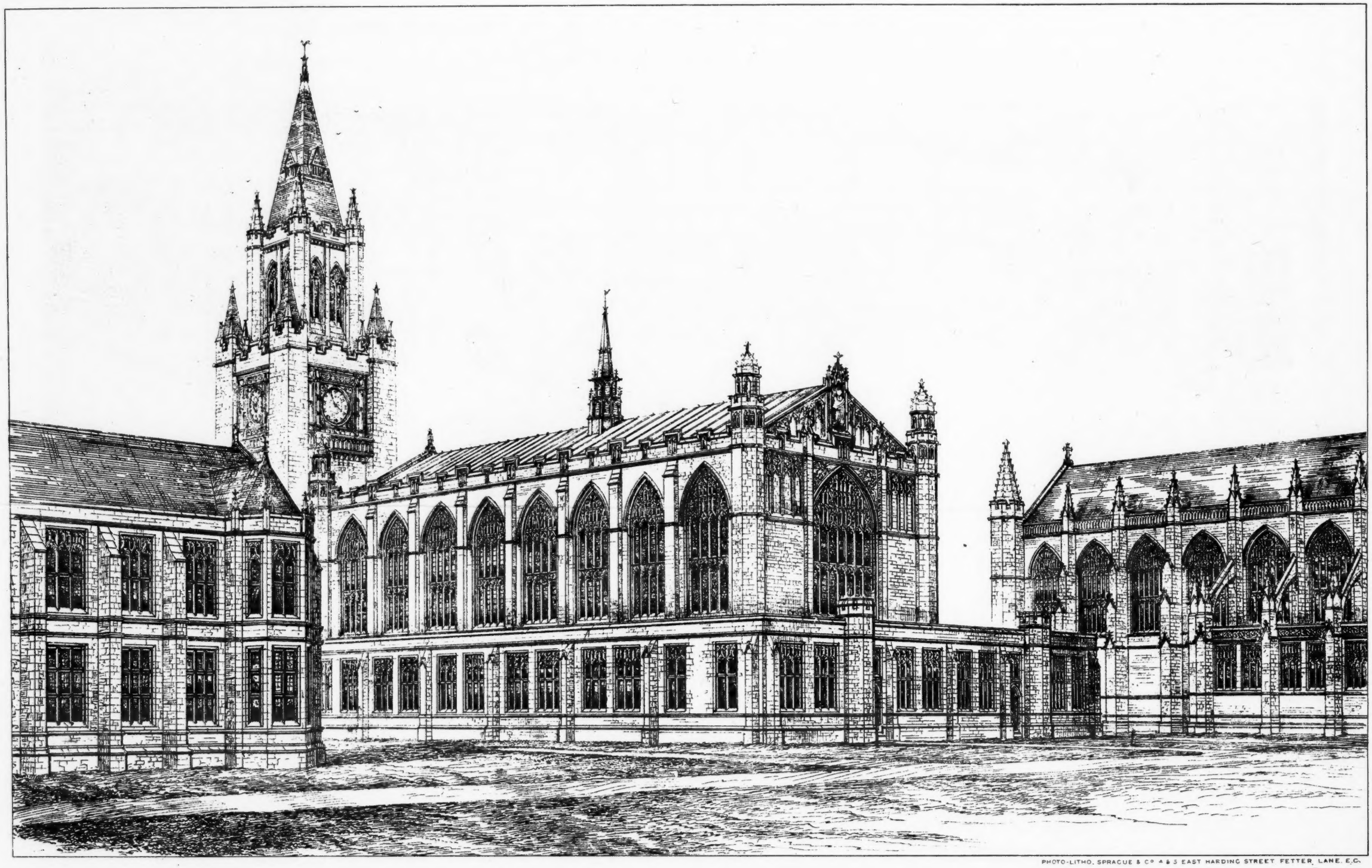
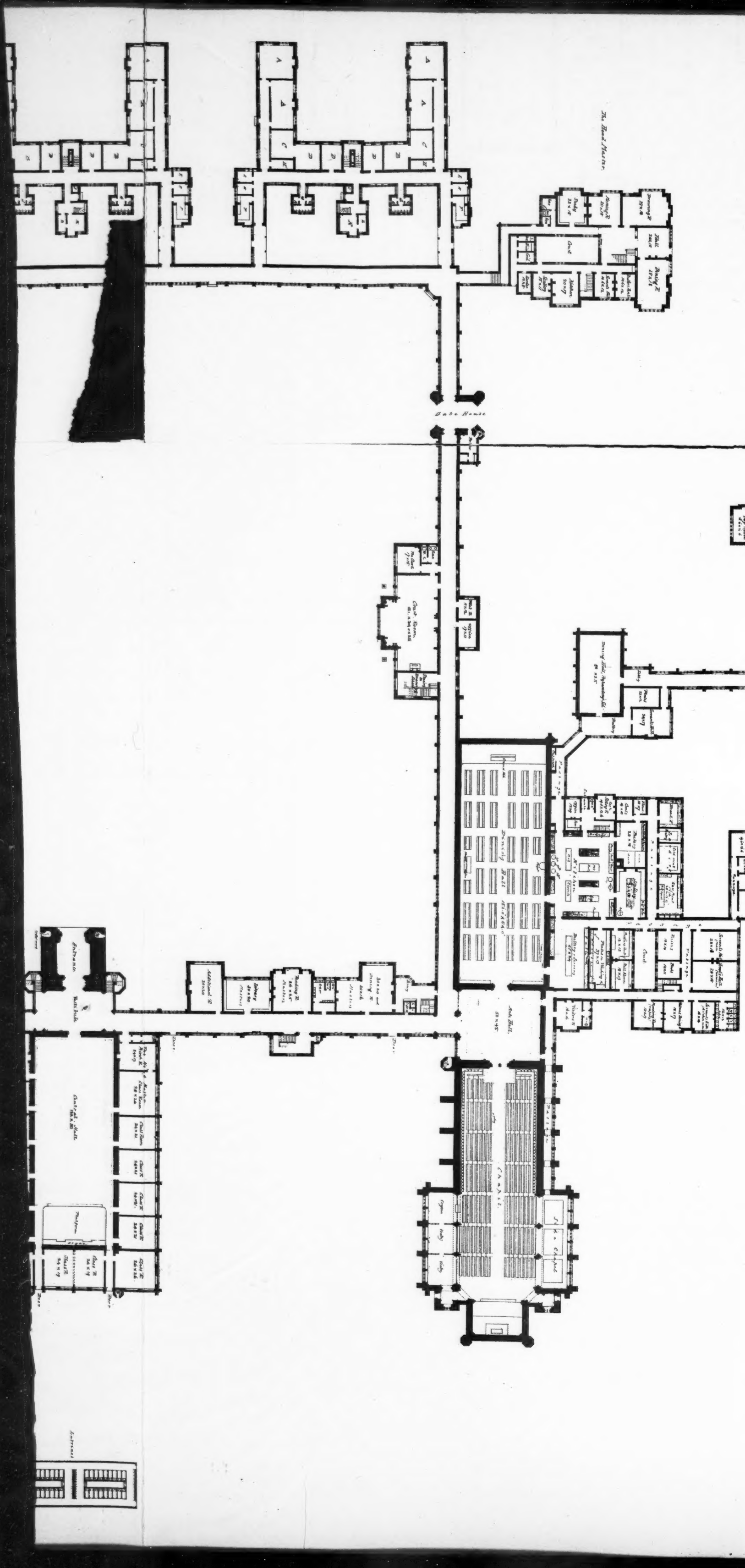


PHOTO-LITHO. SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE. E.C.

COMPETITION DESIGN FOR CHRIST'S HOSPITAL SCHOOLS.—By Messrs. Carpenter & Ingelow.

VIEW OF HALL AND CLASS-ROOMS, WITH PART OF MUSEUM AND CHAPEL.

GROUND PLAN


The Head Master.
Gate House
Great Hall
Chapel
Library
Entrance
Entrance

Entrance

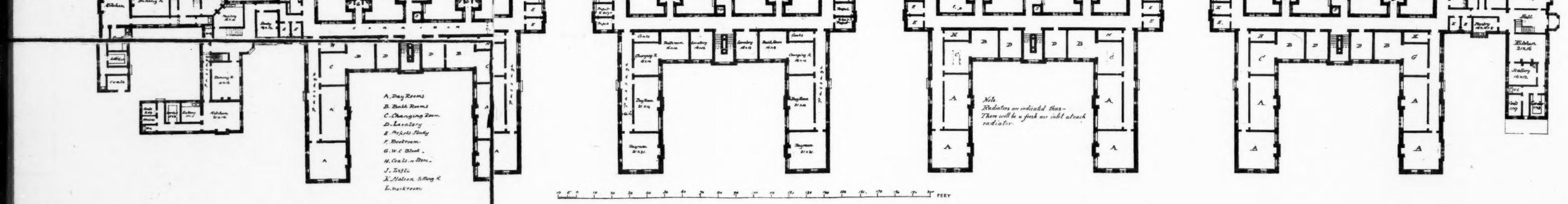
Entrance Hall

Central Hall

Museum

MUSIC HOUSE

Entrance



Carpenter & Ingelow
4 Carlton Chambers
Regent St
Dec: 1893

COMPETITION DESIGN FOR CHRIST'S HOSPITAL SCHOOLS.—By Messrs. Carpenter & Ingelow.

GENERAL PLAN.

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